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GLEANINGS

IN BEE CULTURE

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By A. I. Root		

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~~~~~  
Carl F. Buck, Augusta, Kansas.

Butler County.



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FANCY.—All sections to be well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel stain or otherwise; all the cells sealed except an occasional cell, the outside surface of the wood well scraped of propolis.

A No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled the outside of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled, or the entire surface slightly soiled.

No. 2.—Three-fourths of the total surface must be filled and sealed.

No. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy White," "No. 1 Dark," etc.

MILWAUKEE.—The honey market here is in a very healthy condition. The receipts are more than for some time past, and a fair demand exists, especially for extracted, and we lack for a better trade as the spring time comes on. We continue to quote A No. 1 comb in 1-lb. sections in clean cans, 10¢/17; No. 1, 14¢/16; old or mixed colors, 8-13 Extracted white in barrels, cans, etc., 8¢/9½; amber, 7¢/8½. Beeswax, 25¢/30.

Feb. 16. 119 Buffalo St., Milwaukee, Wis.

ALBANY.—Honey market is firm with light stocks. White comb, in good condition, 15¢/16; mixed, 14¢/15; buckwheat, 13¢/14. Extracted buckwheat, 1½¢; white, 7½¢/8. Beeswax wanted at 30. Our market is going to clean all out of honey this season, and carry none over.

Feb. 10. 375 Broadway, Albany, N. Y.

CINCINNATI.—The comb-honey market continues to be drabby, and hardly any demand, and therefore prices have weakened. Fancy white clover sells for 15¢/15½. For amber there is no demand. The market for extracted is fair, and prices rule as follows: Amber, 5¼¢/5½, by the barrel; in cans it brings a little more; alfalfa, 7½¢; white clover, 8¢/8½. Beeswax, 28¢/30.

Feb. 18. 2146 Central Ave., Cincinnati, O.

DENVER.—Comb honey has not been much in demand lately, and prices have a downward tendency. No 1 white comb, \$3.00/\$3.25 per case of 24 sections; No 2, \$2.50/\$2.75. No 1 white extracted, 7½¢/8½. Beeswax, 22¢/27, according to color and cleanliness.

Feb. 1. 1440 Market St., Denver, Col.

CHICAGO.—The market is in very much the same condition as when last quoted. There is still an excess of fair to good comb honey, not too much fancy, but more than an abundance of other grades.

Feb. 19. 199 South Water St., Chicago, Ill.

SCHENECTADY.—Our stock of both comb and extracted is greatly reduced, and we have hardly enough to fill orders, especially of fancy white comb and dark extracted. We quote No. 1 white clover, 14¢/15; No 2, 13¢/14; buckwheat, 12¢/13. Extracted, light, 7¢/8; dark, 6½¢/7.

Feb. 20. 523 State St., Schenectady, N. Y.

SAN FRANCISCO.—Honey market as follows: Comb, per lb. 10¢/13. Extracted, water white, 7; light amber, 6¢/6½; dark amber, 5. Beeswax, per lb., 28 cts.

Feb. 14. E. H. SCHAEFFLE, Murphys, Cal.

KANSAS CITY.—The demand for both comb and extracted honey is better, with receipts light. We quote as follows: Extra fancy, per case of 24 sections, \$3.40; strictly No. 1, \$3.30; No. 1 amber, \$3.00/\$3.25; No 2 white and amber, \$2.50. Extracted white, per lb., 7; amber, 6¢/6½. Beeswax, 30.

Feb. 21. 306 Grand Ave., Kansas City, Mo.

BOSTON.—Our market on honey continues same as per our last quotations. The supply is fully equal to the demand.

Feb. 19. 31, 33 Commercial St., Boston, Mass.

NEW YORK.—The demand for comb honey is light, and supply sufficient to meet it. Prices continue weak. Fancy comb, 14¢/15; No. 1 comb, 12¢/13; buckwheat comb, 11¢/12. Dark extracted in good demand; also considerable movement in other grades. Dark is worth 5¢/5½; light amber, 5½¢/6½. Beeswax, firm at 30.

Feb. 19. FRANCIS H. LEGGETT & Co., Franklin and Varick Sts., New York.

PHILADELPHIA.—There has been no change in comb honey since our last report. Receipts coming in slowly, and sales accordingly. We quote fancy 16¢/17; No. 1, 15; No. 2, 14. Beeswax in good demand at 31; receipts light. We are producers of honey and do not handle on commission.

Feb. 21. WM. A. SELSER, 10 Vine St., Philadelphia, Pa.

BUFFALO.—The stock of honey in our market is quite light. No extracted here, and some call for it. Fancy white comb, 15¢/16; A No. 1, 14¢/15; No. 1, 13½¢/14; No. 2, 12½¢/13; No 3, 12¢/12½; No. 1 dark, 11¢/12; No. 2 dark, 10¢/11. Extracted, white, 7½¢/8; amber, 7¢/7½; dark, 6¢/6½. Beeswax, 28¢/30.

Feb. 8. W. C. TOWNSEND, 167 Scott St., Buffalo, N. Y.

WANTED.—Fancy comb honey. State what kind you have, how put up, and price per pound.

C. M. SCOTT & Co., 1004 E. Washington St., Indianapolis, Ind.

FOR SALE.—We are sold out on alfalfa honey, but have ten 30-lb. bbls. of light amber and buckwheat at 7c; forty 250-300 lb. bbls. fancy basswood at 8c; 60-lb. new cans, two in a case, 9c.

E. R. PAHL & Co., 294, 296 Broadway, Milwaukee, Wis.

FOR SALE.—One barrel partly full (near 400 lbs.) of extracted honey mixed with honey-dew, but light color; good for feeding or factory purposes. Price 5½ cts. per lb.

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M. P. RHOADS, Box 216, Las Animas, Colo.

WANTED.—Beeswax; highest market price paid. Write for price list.

BACH, BECKER & Co., Chicago, Ill.

WANTED.—Comb and extracted honey. State price, kind, and quantity.

R. A. BURNETT & Co., 199 South Water St., Chicago, Ill.

FOR SALE.—Extracted honey. Finest grades for table use. Prices quoted on application. Sample by mail, 10 cts. to pay for package and postage.

OREL L. HERSHISER, 301 Huntington Ave., Buffalo, N. Y.

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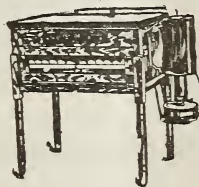
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GLEANINGS

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

BEE CULTURE

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MAR. 1, 1903.

No. 5.



MR. EDITOR, it's bad enough for you to try to "work" me; but when you sick W. Brockunier on me, p. 160, you're going too far.

I THINK several queens have been reported like that one on p. 133. I have had just one. She kept laying all right, but never an egg hatched. I killed her.

D. I. WAGAR, in binding GLEANINGS, p. 158, gauges the punching by using a previously punched number. He may like better a punched piece of tin as a gauge.

I THOUGHT—still think—that we ought to have had a new election for a General Manager. But I believe in submitting to the majority, and the thing now to do is to push forward unitedly together.

HON. REDFIELD PROCTOR, U. S. Senate. Have you written him, urging additional appropriation? See page 136. [It may be too late to write now; but it will do no hurt to send a letter, at all events.—ED.]

A GOOD IDEA, that of J. P. Lytle, p. 156, to have a strip on the bottom of the hive to support the bottom-bars of frames with newly transferred combs. If not prevented in some way, heavy transferred combs are sure to make bottom-bars sag.

STUDYING Utah bulletins has made J. A. Green rather blue about alfalfa—p. 139. A good dose of the Colorado bulletin will cheer you up, Jimmie. [Get a stack of those bulletins and hand them out, Jimmie, to those ranchmen in your neighborhood.—ED.]

BUTTERFLIES swarming on alfalfa-blossoms and blossoms blasting. Isn't it possible the butterflies lay eggs in the blossoms, and the larvæ get in some lively work? [Very possible. Prof. Cook refers to the same matter in this issue.—ED.]

DR. EASTWOOD suggests fences to get brood-combs built straight, p. 159. Colvin's comb-guides were used for that purpose more than 40 years ago, but were cast aside long ago. [But foundation was not in use at that time. Possibly that would make a difference.—ED.]

A WORD to beginners. Whatever else you may believe or not believe, set it down as one fixed article in your creed that the queen is the all-important factor in a colony, and that the time and trouble taken to rear the very best will yield immense returns on the investment.

THE ANSWER to I. D. Olver's question, p. 150, is true, but the question might be answered more fully by saying that for extracted honey it works all right to raise three, four, or all the frames of brood above excluder, leaving queen below, and if all are raised he may have no swarming.

C. M. AARONS can not get a laying-worker colony to accept any kind of queen, page 155. Let him try a virgin just out of the cell, or not half a day old. Remember, too, that it is not a single worker that's laying, but a large number are at the miserable business. They probably just quit when a better layer starts in.

C. H. W. WEBER I know to be a very solid sort of German, so I put a good bit of faith in his experiment with formalin for foul brood, p. 151. Just as I said in a Straw some time ago, if formalin kills every thing in the comb, then we can save our foul-broody combs. [The experiment of Mr. Weber is certainly interesting. We shall hope to try it if given an opportunity this summer.—ED.]

"TWO BUNCHES of bees are never as good for wintering as the same number in one cluster," page 154. Right. And the one cluster will winter, probably, not quite, but very nearly, as well if a thin board is shoved down through the middle of it. That's just the way it is when two nuclei are properly lodged in one hive. I've many a time seen them in the cellar in winter clustered just like a single cluster with the division-board between them.

J. T. HAIRSTON is quite right, p. 151, in saying that whiter sections would be secured over new than over old combs. Jesse Oatman once told me that he seriously thought of melting up all his old combs and having new built for the sake of whiter sections. The bees carry bits of the old combs to help cap the sections. But they don't carry them any great distance, and thick top-bars make the distance so great from the combs to the sections that it's nearly or quite as good as having new combs.

I'M AFRAID, Mr. Editor, that you concede too much to G. H. Place's plan of increase, p. 159, when you say he can make increase that way, especially as he wants to increase "to the extreme limit of ability." With a hive 24 inches deep, and combs built only three-fourths down, there is very little probability that the queen will go up and lay in a story placed over. [You have read more into what I said than what I intended, for you hitch on to what I wrote a statement of Mr. Place. I said he *could* make increase on that plan, and so he could, *after* the combs were built down. But I went on to say that there was a *better* way.—Ed.]

THE ADVICE of the editor to the inexperienced, p. 145, to rear queens during swarming time, is equally good advice for the experienced bee-keeper who rears only for his own use. Only the man who rears queens for sale, and so can not rear a sufficient number during swarming time, needs to take the extra trouble to rear them at other times. For the up-to-date bee-keeper, however, it's not the best thing to trust to swarming-cells. Take your colony with best queen, build it up *very strong* by adding brood from other colonies, then unqueen it, and you'll have a lot of cells as good as swarming-cells, and *all* from best stock.

ANOTHER suggestion as to that fertilizing tent, p. 132. Let the entrance of the nucleus having the virgin queen be half in the tent and half out, the outside part having excluder zinc, and the part opening into the tent being closed at all times only when desired to have the young queen fly. Then when the queen would try to get out through the excluder she would not fail to get over the edge of it into the tent. [Yes; but why shouldn't the workers get into the habit of getting into the tent as well as through the perforated metal? If the workers mingle with drones inside of the tent, they cause confusion. We are told that the success of the plan depends on keeping the workers out.—Ed.]

R. RHOMBERG, in an able article in *Bienen-Vater*, reports investigations as to ventilation. He put a straw mat over a hive, filled the hive with smoke, then watched the smoke escaping upward. It came through the needle-holes, the wrinkles in the binding, and especially along the crack where the cushion lay on the hive, but never a bit came through the straw. That the straw is impermeable is further shown by

the fact that it becomes damp. If air passed through it, then the moisture would pass through and settle on the outer surface, leaving the mat dry. If he is right, and I suspect he is, then we are a bit off in thinking that cushions are good because the air passes through them. They are good because they are non-conductors, keeping warm. The air must be allowed to escape through little holes or cracks, and the under surface may be water-tight, only so it is warm. [There is something in this, I believe. Absorbents will take up water; but if they would allow air to pass through them, that water would be evaporated, but it is not. The common practice now is to put a sealed cover over the brood-frames in winter, and then the so-called absorbents on top, not to "absorb," but to provide a non-conductor of heat.—Ed.]

W. MATTHES (*Deutsche Bienen-Freund*) claims that a bee, for all its thousands of eyes, doesn't see as well as a man. Likely he's right. Although they work in the dark, they can do that by the sense of feeling. But they can't get around outdoors without a lot more light than is absolutely necessary for a man. Bees don't sting as much in a house-apiary, because they can't see so well. In the evening, when it is still light enough for you to see quite distinctly, throw a bee in the air and it will never find its hive. When a cloud comes up on a bright day, the bees hustle home for fear it will get too dark for them. [That is true. Bees do not seem to see clearly. To get rid of a lot of bees when I had suddenly brought on an onslaught, I on one occasion dodged behind a post, dropping down low. The bees bumped into the top of the inanimate thing just as if they thought they had got their man; but as soon as they struck they flew off, concluding they had made a mistake. In the same way a lot of bees will follow one up to an open door; but just the minute he steps inside, they will stop and hover around, for apparently it is blank darkness to them. It is probable that all the operations in the hive are performed more by feeling and smelling than by sight.—Ed.]

A. I. ROOT'S REPORT shows Cuba ahead of this region as to some phases of the drinking business. Now I'd like to know whether *treating* is as common there as it is here. Take away screens, and stop treating, and you will cripple the saloon business no little. [Right you are. We are forced to get rid of the saloon by degrees, and as soon as public sentiment will back up the law. One of the first laws we ought to have is one that will prevent screens in front of any place of business except, perchance, legitimate restaurants, banking-houses, and other businesses of that character. Why does the American saloon have a screen in front of it? Simply because it would not do to have its acts behind subject to public gaze. "They love darkness rather than light, because their

deeds are evil." Why shouldn't our groceries, our drugstores, our bakeries, and our meat-shops have screens in front of them? As to treating, a penniless old drunk once told me that, without a cent of money, he could get all the liquor he wanted at any time. All he had to do was to hang around with the crowd and take his drink when some one else who had money was disposed to "set 'em up." Four or five fellows walk into a saloon at the invitation of one of them. One treats. No. 2 concludes he had better treat; and so on, every man, if he has any money, "sets 'em up," and all the hangers-on, without money and without price, drink to his health (?). By the time each has had five drinks, when the natural appetite would crave but one, they are pretty "bummy." The treating habit is not seen in any but the American saloon. Yes, let us pull down the screens and also stop this treating. Let us knock out one prop after another until the whole miserable business totters.—ED.]



An error occurs on p. 160 of our previous issue. In speaking of sulphur as a cure for paralysis, Mr. Pierce meant to say, "I then gave them another good dose, larvæ, eggs, bees, and all, and in about two weeks the disease had entirely disappeared." As printed, it said the bees had disappeared.

I have been asked several times to make out a list of the principal German and French bee journals, with their addresses. For the benefit of our German readers, and perhaps others, I here give the names of all that come to our office. It would be well to remark that German bee journals represent, as a general thing, some particular section or organization, the journal being published for the special benefit of such, just as trade journals are here. In this country each journal stands on its own merits, and tries to teach the best methods for the entire United States.

Deutsche Imker aus Bohmen (Bohemian Bee-keeper) is a fine journal in every respect. It has about 32 pages besides a large amount of advertising. It is published in Prague (Prag), Bohemia. It is edited by Hans Bassler.

Bienenwirtschaftliches Centralblatt is published in Hannover, Prussia, Georgstrasse 32 (32 George Street). It is 33 years old, and quite progressive.

Leipziger Bienen-Zeitung. This, as its name indicates, is published in Leipzig, Germany. I suspect more Germans would be interested in this journal than any other one printed in Germany. The issue for February has 16 pages of reading-matter and 24 of advertising, and is, in this respect, the best-patronized bee journal I have seen. Much attention is paid to questions and answers, and to gleanings from other journals. The price is 40 cents for Americans.

Bienenzucht (Bee Culture) is edited by F. Gerstung, Ossmannstedt, Thuringia, Prussia. It has 16 pages, and is beautifully printed.

Illustrierte Monatsblaetter fuer Bienenzucht. This is edited and published by one of the most prominent bee-writers in Europe, Mr. Thodore Weippl. The address is Klosterneburg, near Vienna, Austria. It has 20 pages, beautifully illustrated. Most German bee journals are almost entirely destitute of pictures. The number under consideration has a view of the field seen in a microscope, four inches in diameter, showing plainly the germs of foul brood. The article accompanying is designed to show the identity of *Bacillus alvei* (the germs of foul brood) and *Bacillus mesentericus*, often found on potato-peelings. There seems to be increasing doubt, I believe, as to the identity of these scourges.

The French journals will be mentioned in the next issue.

El Colmenero Espanol is one of the best foreign journals that reach us. It is made up largely of that which is of interest in most other foreign journals. Here is something relative to the introduction of queens, which I never saw yet, and may be worth trial. I translate it from the Spanish:

"When I introduce a new queen to a colony I take away the old mother and give to the bees a new queen inclosed in a cage. The next day I go back and take the cage out and submerge it for an instant in cold water, and, without waiting, let the queen run loose among the bees.

"Queenless colonies, those having too many drones, or which have laying workers, are treated in this way. Since doing this I have not lost a queen, and have not injured one, either native or foreign.

"I think it well to add a few observations, based on my experience, as to the reason for the favorable reception of the queen that has been submerged in that sort of bath. When the queen finds herself so wet in the hive she remains motionless on the comb, numbed by the cold water. It is admitted that a queen which remains quiet inside of a hive is not so readily attacked by the bees as one that runs around in an agitated manner here and there. The bees get near her and suck off the water covering her, without molesting her in any manner. It is needless to say that, after having dried her, they will not kill her. Perhaps, on account of her bath, she loses her distinctive odor."



WHEN DO QUEENS, GOING WITH AFTER-SWARMS, MATE? ETC.

"A neighbor and myself have been having a dispute over the mating of queens, and we have agreed to leave the matter to you to decide. Will you do this, Mr. Doolittle?"

"That will depend somewhat upon the matter for decision. If the matter comes within my experience, I can tell you what my experience has been."

"The matter is of considerable importance to me, as I wish to clip all queens as soon as mated, but I wish to be sure that they have mated, for it would spoil them to be clipped before they are mated, would it not?"

"Certainly. And it is always well not to clip any queen until she has commenced to lay; for often they are seen to return with every evidence of having successfully mated, only to go out again before they commence laying. But what is the thing that you and your neighbor are disagreeing upon?"

"My neighbor claims that almost all young queens are mated previous to the time they go out with after-swarms, and that, if I can see these queens when running in with the swarm, at time of hiving, as I very often do, then is the time to clip them, and thus save looking them up later on."

"Well, what is your claim?"

"I claim that very few, if any, queens are mated before the after-swarm leaves the hive. We both agreed to abide by your decision, so you need not be afraid to say what you think, for each of us will take it kindly, no matter which is wrong."

"I mistrust that your neighbor has kept very few bees, or else has inclined his ear to some of the 'knowing ones;' for if any bee-keeper of any prominence ever put forth the claim that any queen leading out any after-swarm had mated or become fertile, before she so led out the swarm, it is something that I have failed to note; and such claim would show that the maker of it could not have looked into the matter very thoroughly. I have made swarming and queen-rearing a study for the past 25 years, spending days, weeks, and months upon it; and if any queen was ever fertilized, or even flew out to meet the drone while there were other young queens in the cells, it is something I have never noticed, and something that all of my experiments go to prove never happens."

"Can you tell us why it should not so happen?"

"All know that after-swarming comes only from a plurality of queens in the hive, and these queens are always those which have never been out of the hive at all, except as they may have gone out with an after-swarm, and been returned by the apiarist."

"Do I understand you to say that there is a lot of queens running about among the bees, at time of swarming?"

"No, not that. As a rule, during after-swarming all young queens which would naturally emerge from the cells, except the first one out, are kept in the cells by a guard of bees which feed them through a hole or small opening in the cell, made by the young queen trying to bite the cover off; and these queens are constantly quawking because they are kept prisoners after they are fully mature, and would naturally emerge; and the one which has her liberty is piping back in her enraged condition—enraged because the bees keep her from destroying these quawking inmates of the cells. You have heard this controversy among queens going on in the hive at after-swarming time, have you not?"

"Yes. But I did not know that this would have any effect on the mating of queens."

"While such a state of things as this is kept up in the hive, no queen has any desire to mate. Her only ambition now is to kill these sisters of hers which are asserting their rivalry so vigorously, and no after-swarming is ever conducted except under just such a state of affairs. I think you can now see where the mating of a queen would be effected by such conditions."

"Yes, I do. But do you think that there never was a case where the young queen was fertilized before an after-swarm was hived?"

"I should not wish to say just that, for I had one case where an after-swarm had been kept back for several days by unfavorable weather, and where only one queen went with the after-swarm, in which I had every reason to believe that said queen was fertilized while she was out with the swarm, or that she went from the swarm while it was clustered on the limb, as I saw this queen entering the hive with the other bees, with the drone organs attached to her, and she commenced to lay two days afterward."

"Would you consider this as an exception?"

"I certainly should, for this is the only case I remember in all my experience. I believe the rule to be that all queens accompanying an after-swarm wait about their wedding-trip until they are established in their new home, which is not, in the case of a plurality, until all the queens are killed but one. When they are thus established, then in from one to four days after hiving, on some pleasant afternoon, and quite often when the bees come out for a playspell, the queen will be seen to leave the hive, and usually will come back successfully mated. Thus you will see that my experience goes

to prove that you were right and your neighbor wrong."

"Yes; and that if I had heeded him I should have ruined every queen whose wing I clipped when I saw her running in with the swarm. But don't you clip any queens when you see they have wings while they are running in the hive?"

"Where I know for certain that a swarm has a laying queen, I would catch her when seen with the swarm, and clip her; but all clipping should be done before the prime swarm issues, for otherwise the swarm may take a notion to go to the woods before I have a chance to hive them. Therefore I always make sure that all queens are clipped before any prime swarm issues; and thus there is no uncertainty about the matter."

"When do you consider the best time to clip?"

"At time of fruit-bloom in the spring."

"Why?"

"Because, at this time the bees are generally very much engaged in the field, so there are few old ones in the hive and in the way. And as few young bees have yet emerged from their cells, there are comparatively few young bees in the hive. This, with the queen being extremely prolific just at this time (under the influence of the first new honey coming in), which prolificness enlarges her abdomen to the maximum size, makes it so that she is easily seen among the few bees, while she is so clumsy under her burden of eggs that she is not inclined to run and hide, as she often will later on. These things combined make it decidedly the best possible time to make sure that each queen is clipped."

"Well, I must be going. I thank you for this interview."

"You are welcome. And when you have more questions you wish to ask and know about, call again."



MR. JAMES HEDDON, of Dowagiac, Mich., desires to have it announced that the patent on his divisible-brood-chamber hive has expired, and that the same is free to the public.

RAMBLER'S HUMOR.

In the February issue of the *Bee-keepers' Review* the editor very exactly describes the humor that was characteristic of the Rambler's writings. He says:

He was decidedly the humorist of our ranks. His humor was not the wooden, made-to-order, try-to-be-funny on-purpose kind, that kind that makes a man shudder, shut his teeth together hard and think

thoughts that must not be spoken. Rambler's humor was spontaneous. It bubbled up like a clear spring that goes laughing and sparkling down the mountain-side. His humor was like that of Josh Billings. It was philosophy expressed in a humorous way. A sad but strange feature, considering the humorous style in which he wrote, was that deep down in his heart was a great sorrow. He was not given to talking of this, but he once wrote me that, when the wife of his youth died, the light of his life went out. No man has done more to brighten and lighten the pages of *GLEANINGS* than has Rambler.

ILLNESS OF THOMAS G. NEWMAN.

MR. T. G. NEWMAN, formerly editor of the *American Bee Journal*, and General Manager of the National Bee-keepers' Union for a number of years, during which time valuable precedents in law were secured, while going to the postoffice in San Francisco suddenly lost consciousness and fell to the pavement. He was carried to a drugstore, and regained consciousness sufficient to give some information concerning himself. "He is now in a critical condition, and complete rest is the surest and almost the only means of assuring his restoration, even to where he may take up the work he has been compelled to drop." He is, at present, editor, treasurer, and general manager of the *Philosophical Journal*, of San Francisco. Mr. Newman has had a very active career, and the hard work he has been doing these many years is now beginning to tell on his not overly strong constitution. He has our sincerest sympathy.

DOES HE INTEND TO PAY FOR THE QUEENS?

MR. S. L. WATKINS, of Grizzly Flats, Cal., has been getting queens of several breeders, and, so far as we know, he has not paid for them. In 1901 he ordered of Mr. W. H. Laws, of Beeville, Texas, six queens. These were sent; but he wrote back five were dead; and Mr. Laws, desiring to be generous, sent six more. Mr. Watkins also ordered queens of W. A. H. Gilstrap, of Grayson, Cal.; but up till very lately he had settled with neither party, although the accounts are nearly two years old. We have understood he has ordered queens of other people in the same way, for which he has rendered no equivalent. He makes fairly good promises to pay in a given time, but for some reason fails to make them good. We have written him twice, and he wrote back some months ago apparently fair letters, telling of his misfortunes; but, so far as we can ascertain, he has not paid any of these parties a copper, and now they do not hear from him. Whether the man is unfortunate, and can not meet his honest obligations, or whether he intends to get something for nothing, we are not prepared to say.

THE GENERAL SUBJECT-MATTER OF GLEANINGS IN BEE CULTURE.

In response to the request to our subscribers to state what sort of matter they desired to have published each fortnight, we are now getting a large number of replies. A

few of these are given below. But while there may be a thousand who wish to have the department of questions and answers more full and strong, and there may be several thousand who prefer to have more of the advanced or technical articles, we should like to get a full and complete expression, so we may be able to follow out the wishes of a majority of our readers. Say, also, whether you like illustrated matter, especially that which shows new kinks and new methods for doing work among the bees.

I like the questions and answers the best.

Earlville, Ill.

J. C. FRANK.

I find questions and answers a great help to me, rather more interesting than "forced, shook, or shaken swarms."

R. W. POLLEY.

North Chelmsford, Mass.

My opinion is that the last number is the most interesting and instructive I have yet seen. A subscription has covered two years.

W. S. CARSON.

Chicago, Ill., Feb. 23.

Your Questions and Answers department is all right. We older ones are not too old to learn, and you know we find lots of good hints among your answers. Keep on doing so.

G. C. GREINER.

La Salle, N. Y., Feb. 23.

Let me congratulate you on the splendid issue for Feb. 15. Give us more questions and answers. Nothing so nearly approaches a practical demonstration of the workings of an apiary.

J. M. REED.

Big Valley, Texas.

Yes, by all means keep up the questions and answers. I am and have been for many years a close reader of scientific and technical papers, and the part that I like most in them all is the questions and answers.

H. D. DIBBLE.

Rochford, South Dakota, Feb. 23.

My preference is decidedly in favor of the questions and answers, as given in the issue mentioned. The articles from the expert beekeepers are excellent, and we couldn't get along without them; but the question department brings out the little practical points that help us at just the point where we need them.

A. J. KILGORE.

Bowling Green, O., Feb. 23.

Speaking from the standpoint of a very green hand, I would say continue the questions and answers by all means. It will tend to keep such as I from making some very foolish moves, and help us to understand the problems which were learned so long ago by the masters that they have forgotten that it wasn't born in them.

H. E. SANDERS.

Chrisman, Ind., Feb. 19.

On page 135 you struck the key-note when you imagined that questions and answers was the "stuff." At any rate that is what I pick out and read first. I am with the little bees, the same as you are with the automobile; don't know the cause and effect, but get other people's experience and profit, thereby saving time, money, and vexation, let alone failure.

Albia, Iowa.

J. L. CHENOWETH.

Bro. Root:—Your last number of GLEANINGS, Feb. 15, is about the best I have yet read. It is chockful of practical information. I always like your editorial notes at the end of each article. But I can't say that I like one department better than any other. They are all interesting.

I use the Danz hive, and I, too, think that making the bottom-bar of the brood-frames as wide as the top-bars would be an improvement, even if it has the one disadvantage you mention.

CHAS. B. ACHARD.

The letter of Mr. Sanders, above, touches on a point that I have found was sadly lacking in the text-books and journals treating on automobiles. They would talk about four-cycle engines, carburetors, spark-plugs, make-and-break coils, plane-

tary transmission, etc., assuming that we novices knew all about them as a matter of course; and it was only after a talk with a practical automobilist that I learned the meaning of those terms; and he even seemed surprised to think that I should be such an ignoramus. Now, I wonder if bee-journals have fallen into the fashion of *assuming* that their beginner class know all about the technical terms that are used so freely in their columns. Let's see. How many know what "post-constructed" and "pre-constructed cells" means? when we talk about "grafting," what idea is conveyed? and just imagine the perplexity of a novice when he finds in his bee paper a good deal about "shook swarms." After a little he falls to wondering whether "forced swarming" has any thing to do with the first-named term. Soon he sees the veterans talking about "prime swarms," and that even they disagree as to what is the meaning of the term. Then some one else has something to say about half-depth brood-frames, and he wonders what is a standard depth. He may read the bee journals for years and scan many of the supply catalogs, and never see the size of a Langstroth frame given. No wonder he is at sea.

But GLEANINGS does not propose to give up its entire space, by any means, to beginners. It wishes to make itself useful to the veteran as well as to the novice. But what it now wishes to know is, what shall be the *proportion* of technical or advanced bee-lore to that which is somewhat more elementary in character.

MR. HEDDON ON A NATIONAL COMMERCIAL ORGANIZATION.

MR. HUTCHINSON, the editor of the *Review*, recently visited Mr. Heddon, one of the bright, brainy bee-keepers better known to some of our readers of some years ago than those of the present day. In the interview that followed, the subject of national co-operation of bee-keepers for the purpose of marketing honey came up. Mr. Hutchinson quotes Mr. Heddon as follows:

I went over the different plans that have been proposed for national commercial organization. He thought the matter over for a while, then said: "Hutch, I don't believe you'll make it work. The country is too large, there are too many bee-keepers, and they are too scattered. They are lacking, many of them, in business abilities. Ordinary bee-keepers have not had the business training that comes to the heads of manufacturing concerns that go into a trust. Any business concern that goes into combination with other like concerns is ready at all times to 'eat crow.' If a whole loaf can not be secured, half a loaf is accepted. Let come what may, they all hang together. They keep up the combination. Bee-keepers won't do this. The moment that a man's honey isn't graded as he thinks it ought to be graded, the moment he does not get the returns to which he thinks he is entitled, out he goes."

I cited him the Colorado Honey producers' Association. "Yes," he said, "the bee-keepers of a certain State or locality may band together, if there is any reason why they should, and make a success of it. California may form an association and make a success; so may Colorado; so may Canada; or New York; but when you attempt to combine all the bee-keepers of this country into one society, or have a central organization controlling the different local organizations, you are courting failure. There is always something

going into the central organization, but nothing coming back."

I then asked him if the National Association might not aid in the way of gathering statistics, regarding both the crop and the markets. He thought it might possibly do this, but considered this to be a work that might better be carried on by the bee journals.

The *Review* wishes to be entirely fair, to give both sides of the subject, and if it is really advisable to drop this idea of first starting a national central organization, working up, instead, local organizations, like that of Colorado, then the sooner we know this the better. The *Review* is not yet ready to offer advice upon this subject.

I do not like to throw any cold water on a laudable enterprise of this kind; but it seems to me Mr. Heddon hit the nail square on the head when he says we can combine bee-keepers in a small area, or corporations over a large area. But our own experience in selling honey is that a large number of bee-keepers are not also business men. Sometimes they will agree to market their honey through certain avenues. After having made that agreement, verbally or otherwise, another offer comes which they consider better, and they will take up with that offer. I do not mean to imply that bee-keepers are a dishonest class, by a long way; but when a few break out of the ranks, those few are able to smash prices, thus demoralizing the market. An effective organization, national in character, should be so complete and perfect in its workings that *not a single buyer* can get any honey except through the accredited organization through which bee-keepers are supposed to market.

Taking every thing into consideration, it seems as if the attempt to organize a national commercial organization for the purpose of marketing honey is a little premature just now. Let us bend our energies toward making strong State organizations, such, for example, as the one in Colorado. And, by the way, it goes without saying, that any good organization should have a good manager. Mr. Frank Rauchfuss, the manager of the Colorado organization, is a good business man. He has shown his fitness and ability to hold together the bee-keepers; and so far his association has been a grand success. When we get half a dozen or a dozen strong State honey-producers' organizations, then it will be time to talk about affiliating these into a large body which will control and handle the output of the several smaller ones.

GENERAL MANAGER N. E. FRANCE.

MR. N. E. FRANCE, of Platteville, Wis., has duly qualified for the position of General Manager, as provided by the constitution. His bond has been approved by the Directors, and Mr. Secor, the retiring officer, has turned over to him \$921.60, the records, index-cards, printed leaflets, and other properties of the Association. Mr. France has actively assumed the duties of his office, for already he has begun on his legislative work. A spraying-bill, without any restrictions whatever, is now before the Legislative Committee of New Mexico, and Mr. France and others have been pour-

ing in doses of information showing how spraying should be limited to before and after blooming time. He has written numerous letters to Nevada, Colorado, Nebraska, Michigan, and New York. He is a very busy man if we may judge from the work he is doing.

"FORTY YEARS AMONG THE BEES."

"FORTY YEARS AMONG THE BEES" is the title of a new and interesting book by Dr. C. C. Miller, just off the press. It is published by G. W. York & Co., of Chicago. Price, postpaid, \$1.00. I have not yet had an opportunity to review the book, but it carries with it all the interest of a good novel, and, to say the least, it is decidedly interesting. The first few pages are devoted to a sketch of the author's early life, how he went through college, working his way through, living on 35 cents a week, and finally graduating \$100 to the good, or \$50 more in his pocket than when he started in his college career. There, I can not say any thing more about the book just now. The boss printer says the space is all taken up; but I will tell you more about this interesting book in our next issue, for it is full of good things.



THE CARE OF HONEY.

Results of Experiments Conducted with Uncapped, Partially Capped, and Capped Honey, or with Samples of Honey Having Different Specific Gravities.

BY R. F. HOLTERMANN.

There is no product of the soil which does not require care and proper handling in storage. Some, perhaps, require greater experience than others—among them being cheese, butter, and honey. For many years it has been my claim that it was a mistaken policy for the average bee-keeper in an average locality to expect to ripen honey by exposure to the atmosphere in tanks. Some four or five years ago I interviewed the Department of Inland Revenue as to testing the purity of samples of Canadian honey upon the market, and also sought, if possible, to have investigations carried on which would lead the department to pass legislation making it an offense to put upon the market honey unripe and of low specific gravity. Experiments with uncapped, partially capped, and capped honey, and honey stored in a damp atmosphere, was at the same time suggested to the authorities at

the Dominion Experiment Farm, Ottawa, Canada.

Prof. Shutt, Chemist at the Experiment Farm, undertook the work of finding the percentage of water in the above samples. That Prof. Shutt is a deep and original thinker, as well as a skillful chemist, we will readily admit from the following facts: He found that in driving off water by heating in a tube, not only was the honey given off, but a portion of the saccharine matter. The levulose decomposed very readily, caramelization taking place, and that the loss in the weight of honey could not be entirely attributed to the driving-off of water. decomposition of the saccharine matter taking place. I may, in passing, say that, when honey is being scorched, which we know it so readily can be, this process is taking place. By one sweep, as it were, Prof. Shutt found that all the past tests were inaccurate as to the percentage of water in honey. Not discouraged, Prof. Shutt set about to find out some way of doing this to prevent caramelization. At the annual meeting of the Ontario Bee-keepers' Association, held last week in Barrie, the above gentleman announced that he had succeeded in finding a way of doing this by means of a prolonged lower temperature. It appears to me that by this method we have a key to the method of liquefying granulated honey without the least possible injury to flavor.

THIN HONEY.

From the tables which I give herewith it will be seen that my claim as to the best method of handling extracted honey is correct. This season we extracted while warm, strained the honey into and through a filling-can with a gate, and from that gate allowed the honey to run directly into barrels which were closed at the bung as soon as filled. My claim was that, in our atmosphere, honey would not throw off moisture, but rather attract it; and, more, that the aroma which new clover and thistle, as well as other honey, have when freshly extracted, would be best retained by sealing it as soon as possible after extracting. Unfortunately, in the experiments, the average degree of humidity was not taken; however, Prof. Shutt stated that the atmosphere at Ottawa was very dry—much more so than at Toronto, and that the cellar in which the honey was stored was also dry.

WATER IN HONEY, 1901.—TABLE NO. I.

Comb	Where Kept	Bottle Closed with	Ex-tracted.	Anal-ysis	Water, per cent.
Capped	Bee - house	G. S.	Aug. 8	Oct. 1	15.46
"	Cellar	G. S.	"	"	15.59
"	Bee - house	C. C.	"	"	16.95
"	Cellar	C. C.	"	"	15.84
Partly C'pd	Bee - house	G. S.	July 1	"	19.12
"	Cellar	G. S.	"	"	20.68
"	Bee - house	C. C.	"	"	20.68
"	Cellar	C. C.	"	"	21.03
Uncapped	Bee - house	G. S.	"	"	19.57
"	Cellar	G. S.	"	"	19.24
"	Bee - house	C. C.	"	"	18.25
"	Cellar	C. C.	"	"	22.00

In the table, G. S. means glass stopper; C. C. means cheese-cloth was placed over the mouth of the bottle.

WATER IN HONEY, 1902.—TABLE NO. II.

Comb	Where Kept	Bottle Closed with	Ex-tracted.	Anal-ysis	Water, per cent.
Capped	Laboratory	G. S.	Aug. 1	Nov. 6	15.78
"	Bee - house	G. S.	"	" 11	15.88
"	Laboratory	C. C.	"	" 6	17.35
"	Bee - house	C. C.	"	" 11	16.25
Partly C'pd	Laboratory	G. S.	July 7	" 6	16.58
"	Bee - house	G. S.	"	" 11	15.31
"	Laboratory	C. C.	"	" 8	15.81
"	Bee - house	C. C.	"	" 11	15.90
Uncapped	Laboratory	G. S.	"	" 8	17.13
"	Bee - house	G. S.	"	" 11	16.33
"	Laboratory	C. C.	"	" 8	17.56
"	Bee - house	C. C.	"	" 11	18.18

(See A, table No. 3).

Other investigations showed that, in some instances, the amount of water by exposure to a moist atmosphere was more than doubled; the flavor, as we might expect, was also much inferior in the exposed honey. While we may except very dry atmospheres, such as we find just this side of the Rockies, the reports go to show that honey can not be ripened by exposure to ordinary atmosphere in summer; and I know that in Canada, at least, we could get an increased market for honey if all would allow honey to be well ripened before extracting, and then give it proper care, until it reaches the consumers' hands.

STORAGE OF HONEY IN (a) MOIST AND (b) DRY ATMOSPHERE.—TABLE NO. III.

November and December, 1902	Original Moisture in Honey	Gain or Loss during Experiment	Moisture in the Honey at End Experiment
A—kept in saturated atmosphere during 1 month	15.88 per ct.	15.58 per ct.	31.46 per ct.
B—kept in a cupboard during 1 month—laboratory atmosphere	15.88 per ct.	-1.64 per ct.	14.24 per ct.
D—kept in saturated atmosphere during 20 days	15.88 per ct.	32.35 per ct.	48.23 per ct.
E—kept in a cupboard during 20 days—laboratory atmosphere	15.88 per ct.	-2.04 per ct.	13.84 per ct.

Tables No. 1 and 2 show that, with almost no variation, the uncapped honey has the greater per cent of water. It is this inferior honey which is doing so much in damaging the market for honey. Not only has this honey not the aroma and flavor of the ripe honey, but if kept in stock by a dealer or the consumer in a temperature high enough to cause fermentation, it ferments. Unfortunately the inexperienced party does not know "what struck him," the work which I am doing at farmers' institute meetings. I have just returned from a long trip of that nature, to tell bee-keepers how to produce and keep a good article, and tell the dealer and consumer how to judge it. Until we as bee-keepers realize the *deeply important* nature of this question we shall not have and hold the largest

available home and foreign market. GLEANINGS, as the leading American if not world's bee journal, can become a powerful factor in the question. At present we are too much like the cheese and butter men when there was no system in producing these foods, and the best methods of storing after production unknown.

Brantford, Canada.

[This is a question that hinges largely on locality. In Medina, honey left exposed in an open dish will evaporate till it becomes almost as thick as transparent wax; and most delicious is it when it is of this consistency. We are about 30 miles south of Lake Erie, and you are about 25 north of it; and I am at a loss to know why honey in your locality should be stoppered at once when it would not be necessary with us.

I have always supposed the locality around Medina was about as humid as any place in the United States. I have seen some government statement to the effect that the region near the great lakes, especially Lake Erie, was more subject to rainfall and general dampness than anywhere else in the United States outside of Oregon; and yet, almost without exception, our honey becomes thicker on exposure to the air. Only rarely have I seen times when it would apparently absorb moisture.

I have looked the table over very carefully, and I do not see that they bear out your position very strongly. Table No. 1 relates to honey stored in a *cellar*. If this is like ordinary underground rooms, I should *expect* there would be some absorption of water as a matter of course; but still the figures show only a very slight increase. Even in table No. 2, where the honey was tested above ground, the difference is not very marked. In one case the unstoppered honey became *thicker*. In table No. 3 the result is no more than we should expect in a "moist atmosphere." In most localities extracted honey is improved by exposure to the air. For the *average* locality, in the summer time at least, I believe it would be positively harmful to recommend sealing the honey, even in that portion of the country known as the rain-belt. Your locality, possibly and probably, is an exception. —Ed.]

PAPER HONEY-PACKAGES.

How the Bologna-Sausage Package is Stuffed and Marketed.

BY R. C. AIKIN.

Mr. Editor:—I am one of those necessary evils known as cranks. It is the crank that gets motion. If it were not for the crank stirring up things it is very little progress we would ever see, for somehow so many people are satisfied with just drifting with the current as a helpless bark. It seems to be the rule that those who do the most for the world are the ones that get the least out of it except in hatred and

abuse; but when dead and gone, the world rises up and calls these same cranks blessed. Being one of the cranks I do not expect more than is customary with such; but if you will give attention for a little time I will tell you some more about that paper-bag scheme that has been dubbed by some the "bologna sausage." I know that, in due time, it will prove a blessing to very many. It is better to be a Paul than a Judas

I need not go over the ground in detail again that I have so often discussed, showing that the returns coming to the producer out of his product are all out of proportion—that is patent, and known to all thinking men. Under average circumstances The Root Co., and other buyers, would pay me about 6 cents for my extracted honey at their place of business; and when freights and packages are out, that leaves less than 4 cents to the producer. The middle man usually wants well nigh that much for profit; and he may buy and sell, turning his money several times in a year, while the producer turns his but once, and has his taxes and such out of it at that. I do not need to enter into a lengthy discussion of that question; we are already too familiar with the subject. It is how to forget that problem we want to know. Well, I am going to tell how I have been forgetting, just the way I went about it, and the success attained. I want to detail all I know about it, so as to make it plain that others may take the short cut to the goal. I have always found that comb honey is a luxury—that is, it was not regularly used, and was much influenced in price and demand by general trade conditions; and it is also so perishable and subject to injury that it can scarcely be sold except at a loss after it is a year old. I have found, too, that extracted honey in glass practically amounts to the same thing, especially when it is inclined to candy freely, as does all honey in this part of the country. Reliquefying and re-freshening a product after it gets a little old is one of the many things that eat up all profits.

So, Mr. Editor, I began to hunt for some very simple and cheap package that would carry extracted honey to the consumer with the least possible expense. I thought of very thin tin, of wooden boxes, of fiber packages, and probably a number of others. I found at the factory a fiber package that was not very expensive, but it was constructed with straight sides, and would not nest; that is, packages of a given size would not slip into each other; and while the weight was but a trifle when packed for shipment, yet they were very bulky, and took a high rate of freight—the charges on the empty package being almost equal to the first cost at factory. At last I decided to try a simple paper bag, and so got a few of the common grocers' bags, such as are used to put up sugar, rice, dried fruits, and such, and filled them. These bags were, however, not made to hold liquids, and there was no

certainly that they would not leak, though there was not much difficulty that way. That class of bags was altogether too limber, and when filled they would not stand alone, and each one must be placed in a form or some kind of support to hold until the honey would become hard. I planned, however, to have forms made in which to put each bag separate, so that, when the honey was solid, the whole lot would be alike, and pack like so many rolls of butter.

But I realized that it would be best to have a special bag made of heavy paper; also that probably it would be best to have the bottom square—the ordinary bag has a rectangular bottom, longer than wide. I wrote The Root Co., or perhaps the editor, and they sent me a few bags such as they used in their business, and recommended me to correspond with Mr. Robert Gair, of Brooklyn, N. Y., in regard to making bags. I went on with my experiments, and figured out the sizes to hold a given amount, made a few samples, and filled one or more to be sure that my estimates were correct. While this experimenting was going on I discovered that a bag that had a square bottom, would, when filled, without any form or mold, assume the round shape; and if of fairly heavy paper they would stand alone too. Thus I continued with the problem, working out the details until I finally decided upon four sizes and their dimensions, endeavoring to have them so as to pack in cases of regular sizes, hoping to have cases that would hold, say, half a dozen of one size and a dozen of a smaller, and probably a dozen and a half of another size. The object was to have the cases as simple as possible, and not have to have a great variety of shape and sizes; but I arrived at no very satisfactory conclusion in results on that point.

Let me digress right here a little from the main subject, to explain a little about the shipping package. According to the railroad classification rules, there is nothing to cover the new package, but it says, "Not otherwise specified, first class." Honey in barrels, casks, kegs, and cans boxed, takes fourth class. So you see the new package, if shipped in boxes, would have to take first-class rating, same as comb honey. But you see if it were packed in kegs or barrels it would take fourth class, and for the present that is the package.

I sent a box of the bags of honey to Denver, and had the matter placed before the classification committee, hoping to get a classification, pointing out that the package was one of the very safest to stand knocking about; that nothing short of fire or smashing all to pieces could materially damage the goods; leakage was out of the question. But I had my trouble for nothing, I was simply referred to the rule that honey-packages not otherwise specified should take first-class rate. That being the situation, the only thing to do until we can

get a fair classification is to pack in barrels or kegs, which, while no doubt not in full accord with the intent of the rule, is according to the letter of the law, in that it is in "*kegs or barrels.*" No doubt the intent was to cover liquid honey in these packages; but we can use nail-kegs, lime, salt, and such barrels, and for safety in transit it is much less likely to damage or loss than the tight barrels with liquid goods which the rule was intended for. Nevertheless, it is still advisable to have the classification so it will cover packages of candied honey in boxes, or any proper package that is convenient for the producer to ship in, but we probably can not accomplish this until there is more of a demand along this line, and some pressure.

The sizes I have decided upon as desirable are 2, 3½, 5, and 10 lbs. For the retail trade from stores, the smaller package will take the lead. As compared with other small packages, the paper bag is so much cheaper that it ceases to be much of an item. I never did use much glass, but have used large quantities of tin, principally lard-pails. I used the regular lard-pail because it was *regular*, and, being a staple stock article, was more easily obtainable, and there was a freight classification that enabled me to get them in at rates that would not apply on other kinds.

The tin cost me, on 4 to 7 pound packages (the 3 and 5 pound pails), stenciled or lithographed with business card, and warranted (formerly illustrated in this journal), about a cent and a half a pound. Lately the price has advanced until now it costs 2 cents a pound. I can pack in paper for approximately a tenth the cost of tin for equally large packages. Let me illustrate this by figures. The first order for bags cost me, f. o. b. Loveland, \$45.06, and was sufficient to hold 23,000 pounds and a little over, while at the same time three-pound lard-pails would have cost me \$450 and upward. Let me make another comparison. My last order for bags had some improvements, and cost a little more than my first one, but I wish to show the difference between this and glass. Of 2-lb. Muth jars, 70 gross would hold 20,160 pounds of honey, and would cost at Medina, Root Company's catalog list price, \$525. Two-pound bags, same as sent to you, Mr. Editor, to hold the same quantity of honey, cost me, f. o. b. Loveland, about \$70. The reason I say *about* is because I do not take time to hunt up the freight-bill, but I know this is very close. I have given the list price of the glass jars, but of course there would be a discount on so large an order; but remember that the freight to Loveland would be no little item on such a bill of glassware. The editor can, if he desires, tell what would be the discount on such an order for glass, and can also tell very close what the freight-bill would be to Denver; but I suspect the discount would not equal the freight. I suspect more breakage in glass too.

Taking the figures I have given, there is, in packing 20,160 lbs. of honey, a difference in favor of the paper package of \$455. Any way you can possibly fix it, there is bound to be more freight to pay on the glass package after filled, and as it goes to the consumer, and more damage by breakage and leaking. I know the claim that the glass jar is worth its cost to the consumer, but that is not true. A little thought will show any fair-minded critic that the great mass of consumers, either in high or low station, have no use for the glass. Especially is this true of the laboring classes, and that is the class who will consume the larger quantity by all odds when the product is put within their reach. They can not possibly have any place to use the jars satisfactorily. Let me crack another nut for you. It is full of meat, and I hope to see it eaten and relished by all to edification.

There was a time in Loveland when we had no saloons, but now the enemy have us down and we have three. When 'twas dry, the people said the drugstores kept right on selling, and there was as much sold as if we had saloons, and they would have saloons and get revenue. Now that we have the saloons and the revenue, the people find that the saloon fills a place that the drugstore did not touch—that nearly all the saloon trade is in addition to the drugstore trade, and that drunkards, bad bills, and general viciousness and rows, have multiplied to the hurt of legitimate and proper trade. There is no need of any more saloons. The place one fills would be better left unfilled; but there is a field in honey trade that is not filled; and the cheaper package and more direct methods will fill a long-felt want, and it will hurt no one—no, not even the *bottle trade*.

THE NEED AND USE OF STORAGE-TANKS.

I have shown that the producer need not invest a great sum of money in packages in which to put up his honey for the retail trade. Paper is cheap. The bulk, too, while the goods are in the flat, is so trifling that any ordinary bee-keeper can carry in his arms enough bags to hold his crop, and the storage room is insignificant, as is the cost. Any bee-keeper can afford to have on hand enough bags to provide for any possible crop; but it is a problem with many to have tin or glass in stock for prospective needs. But this is not the only saving. It is customary with very many to put the crop into five-gallon cans, or something similar, holding in these until ready to put into glass or whatever it is to be retailed in; thus the honey is actually packed twice where once is sufficient, and all the trouble of melting and labor and fuel, as well as a plant of some kind to liquefy, is saved. Then there is usually a honey trade at the home or honey-house, and for this we must have a tank of honey kept warm and limber so it will run. This is drawn into customers' pails or whatever they bring for it,

and this is a great annoyance too. Just think how much easier it will be to hand out a bag, or any number of bags, instead of pouring out liquid honey!

A part of any system of producing extracted honey is a storage-tank. This tank should never be left out. It saves time, helps to a better grade of honey, and for good results is indispensable. I know there are those who put the honey direct from the extractor right into marketing-packages; but I do not want such, nor does anybody who knows what is best. Some run it into a barrel or small tank, and from this to small packages, putting through the tank or barrel possibly a thousand pounds in a day. Thus it is impossible that the honey be settled at all. It ought *never* to be packed in retail packages without settling at least 24 hours or more, and then many times only from the bottom of the tank at that, the upper third or fourth being held longer. I know what it means to have unripe honey. All should be thoroughly ripened; and not only ripe, but should be settled long enough so that all the air may rise to the surface, and all particles of whatever may get in may rise to the surface.

Realizing some years ago the necessity of a large tank, how it would enable me to put out a better article of honey, and how it would be such a convenience to have storage room sufficient so that, if I had a ton or two to run at one time, I would not have to stop the extractor to draw off, and how nice it would be to be able to leave off ordering cans (that was before the present system was adopted) until I had the honey to put into them, I decided to get one that would give me all these advantages. The result was that I bought a five-ton galvanized steel tank, although I had a tin one that held 1100, another 600, and a third 400 lbs., and still another that held about 800. With the larger tank I can extract without fear of its overflowing, even if I run all day or two or three days. The extracting is done on the upper floor; the strainer is in the floor, and delivers its goods to the tank below.

A notable feature of our honey out this way is its readiness to candy. I have never had any remain liquid over four weeks after extracting, and sometimes it is solid in two to three weeks. This feature I count as a valuable one, for it enables me to put the honey into the retail package and have it solid and ready to ship in very short time. I let it remain in the big tank until it is beginning to granulate, just as long as it will run. Sometimes it will begin to granulate at the bottom before the top shows any signs, probably because that at the bottom was extracted first and has been in longer, and probably in part because the top is more thin and watery. Then, too, it will surprise almost any one how much scum and bits of wax will accumulate on top after weeks of settling. This should be skimmed off; or if the tank is not convenient for skimming it may be

left as it is, just drawing off until this is brought to the bottom, then the skimmings may be drawn out, and the whole warmed and restrained or skimmed in some smaller vessel. But in case the honey toward the bottom is much more candied than the top, better, if possible, skim before drawing; then take a big hoe, or something suitable, and stir and mix the whole tankful as thoroughly as possible. The more it is mixed, the better. It will be of more even grade, and candy all the more rapidly. I have, when I wanted some to candy quickly, mixed some candied with the liquid, and stirred them together. To do this I take a can of candied, and warm it, stirring so that it will get into a mush before it is fully liquid, then stir in. This plan is resorted to when my stock is out, and I want some speedily to fill orders, say just as the new honey comes and the last is exhausted.

You will possibly say that the big tank is an expensive thing and can not be afforded. Look at these figures: My tank holds five tons, while it would take 83 cases of 60 lb. cans to hold as much, which would cost, at 75 cents, \$62.25. My tank cost \$35, though such goods are higher now, but tin is high too. But the better product, and the convenience and saving of time, will quickly pay for the tank, and it is a permanent thing.

For the average producer I would not advise so large a tank, possibly two to three tons, but always enough tank room to hold the honey long enough to be well settled. Five tons is a large amount of honey in a body, and I doubt if it is wise to risk more than that in one receptacle; for if a gate should be misplaced it means a big loss. However, for heavy producers I would not recommend any smaller size. One does not have to fill it full, yet in emergency the extra room is *very* handy. Have the gate put in the bottom, coming out with an elbow in a pipe, if a common tank is used. If I had my preference I should want it fixed much as the extractor-cans, so that the honey will all run out.

Friend Root, possibly you will think this is a lot of talk about tanks and such things in a consideration of paper bags in which to sell honey. Perhaps it is; but it is important to the system. I have been unfortunate enough to buy extracted honey that would not do to put into tin, much less into paper. Then, besides, the paper bag is only a part of a system to enable the producer to get something out of his crop in a feasible way. Now I will tell you more about bags.

When figuring out what sizes I wanted, I concluded that 2 $\frac{3}{4}$, 5, and 10 lbs. would be about right; but what dimensions would be best for appearance and convenience? I adopted the following, which I am quoting from my original investigations: For 2 lb. size, the bottom is 2 $\frac{1}{2}$ inches square, and when opened is 7 $\frac{1}{2}$ inches deep. The 3 $\frac{1}{2}$ -lb. is 3 inches square and 9 $\frac{1}{2}$ deep.

The 5-lb. is 3 $\frac{1}{2}$ by 10, and the 10-lb. 5 by 10 $\frac{1}{2}$. These measurements, when containing the amounts, leave enough top to the bag to fold over the honey to keep out dust. I have previously spoken of the square shape of the bottoms. This is necessary unless the bags are to be held in a form or mold while hardening. With this bottom the bag assumes the round form when filled. All things considered, I believe the round better than any other shape. If square, the corners would be much more subject to damage than a round surface, and then there is no need of any mold or form. So far I have just put the bags into boxes and let them stand, the boxes piled on top of each other. I plan, however, to make special boxes or trays, these to be tight enough to keep out dust and insects, as flies, but so as to lie flat when not in use, so as to store in small space, making each tray so that the bottom of each is a cover for its neighbor beneath.

The bags must be paraffined or waxed. I got the first lot without waxing, and the majority of those used in experimenting proved satisfactory; but I got one report, and had one experience at home that showed the need of waxing. I will say that my experience with the bags in marketing is as yet limited. It was but a year ago that I undertook to use them for general marketing, and then I had a stock of lard-pails that took the bulk of my 1901 crop. It was in that year that I developed the bag question to the point that I was satisfied to adopt it, but did not get in the first order for bags till in the winter of 1901 and 1902, then I had to melt honey and repack; but I did this, and put up enough to send shipments to several customers, sold some to peddlers, and some in home stores.

A customer from another State reported that he thought the honey would not keep in his climate—it would melt. About the same time, I had some bags standing where there was a draft of damp air from the greenhouse and cellar passing over it, and during a few days of damp foggy weather I found the bags drawing dampness so that the honey just under the paper was getting soft, and the bag sticky. But while this was an unintentional test, it so happened that there were both paraffined and unparaffined bags in that particular spot, and the waxed was dry and in as good condition as ever, only the unwaxed being damp and absorbing moisture. I was glad to have that experience, for I was about to buy many thousands to put up a big prospective crop; but the new stock were ordered all paraffined, and it is of them that the editor has samples. Experience teaches us many lessons, and I found two more as I dealt with the new waxed bags. First, the manufacturers packed the bags in bundles wrapped in heavy paper, and tied with cord, and in the long journey from New York the wrappings were worn through in some places, and torn in others by the rough and tumble with other goods. In

shipping they should be so packed that they can not be damaged. There was no great number spoiled. The other thing learned was that when opening the bag to fill, they ought not to be so cold that the wax is hard, for sometimes the paper will break into a little hole. It would be all right in summer weather, or in a room not too warm at all to work in. Both these points are simple and easily adjusted, but are some of the details to be understood.

In closing I will just say that the question of marketing in the candied condition is settled. No doubt there will be many people who will continue to say it can not be done, but I know it can, and have done it. It seems to me that, after selling in many towns and several States, and that everywhere the honey goes it always calls for more, until I can not produce enough to supply my demand, ought to be evidence enough to satisfy any ordinary mortal that there is something in it. Some will call me a fool for telling about it; but I am not one of the other kind of fools who think that selfishness is the sum of wisdom. As I said at the Denver convention, there is a field almost as wide as the commercial world, and why should I be so niggardly as to withhold information from my brethren that may help them while it will not hurt me? There is room yet for many more in the marketing field.

One thing more: This development has cost me something. If it helps others, I shall rejoice in their prosperity; but, brethren, please don't flood me with letters to know all about it, and ask me to take my valuable time to write all over the country detailed descriptions at my own expense and neglect of my own business. I have to make a living by the sweat of my brow as do others. A few have written and asked information and samples, and have inclosed stamps, and this is no reflection on them, and they are not so to consider it. My purpose in writing this is to forestall those who are so thoughtless as to expect long replies without even a return stamp.

Loveland, Col.

R. C. AIKIN.

[I will explain to our readers that the bags of honey here shown are those which were facetiously styled by Mr. Abbott, at the Denver convention, "bologna-sausage packages." This raised a good deal of merriment, and, as I reported in GLEANINGS at the time, there was a warm discussion between the candied-honey men on one side, led by Mr. Aikin, and the bottled-extracted-honey men on the other side, led by Editor York. Both sides gave "convincing proof" that *their* way was *the* way to sell extracted honey.

Notwithstanding 'all the fun about the bologna-sausage package, I believe it has come to stay, and Mr. R. C. Aikin deserves a vote of thanks for showing what can be done in putting up extracted honey in a package that costs practically nothing, and in so compact and substantial a condition

that it can be shipped clear across a continent without leakage or damage. Indeed, Mr. Aikin, at my request, made to him at Denver, sent me a kegful of his bologna honey. Every one of those "sausages" came through in good condition. They were packed in the keg with straw, and came through as "honey in kegs."

They were quite a novelty in our honey department, and were prominently displayed on our shelving near the time-clock; and as the employees marked off their time, they stopped, looked at the honey, admired it, and (would you believe it?) without any urging on our part they came very near taking the whole lot before I had a chance to see any of it and sample it. I got downstairs just in time to save the few packages shown in the photo, and get one for myself. "My, oh my!" I said, "don't sell any more."

"But," said the time-keeper, "the men are clamoring for more. They say it is the nicest honey they ever tasted. They like it in that shape."

And that reminds me that we have quite a number of employees who prefer candied honey to the liquid transparent article, because it can be spread on bread and butter, and eaten without smearing up a mouth covered with whiskers.

A little inquiry showed that the employees felt that, when they were buying the new "bologna-sausage" honey, they were not wasting any money on the package. They were buying just the pure condensed sweetness in very palatable form. If Mr. Aikin had only sent us a barrel of it, I believe it would have been all taken in a day, and even now our men are asking for more of it.

Well, I took one package home to my own table; and while I am not a great eater of honey I set a "sausage" on a plate, peeled it according to directions, or about as shown in the picture. My folks were away from home, and I was at liberty to eat in a way that would probably have called down the disapproval of my wife. Yes, I "shoveled" that honey in—spread it on my bread, and enjoyed a huge feast. The honey tasted all the better to me because I thought here was a package that cost practically nothing so far as the contents were concerned, and which I was satisfied was a commercial success.

In the modern bill of fare the day may come when we shall see bologna-sausage honey as one of the articles; and I can see in my mind's eye the waiter at the hotel bring on one of those cheeses on a plate; and I can just fancy the epicurian sitting down and shoveling that cheese in. But, of course, the consumer will have to be educated. It would not do to put such an article in the restaurants of Chicago, especially if Bro. York were around. It would not go. But in Denver, in Loveland, in all localities where honey in candied form is recognized as a standard product of the hive, these cheeses will go like hot cakes.

And, only think—these bags can be reduced in size, so that one with a sweet tooth can go into any of the stores and buy a nickel's worth, peel his "sausage," and get an amount of sweetness that will leave any form of confectionery clear in the shade. What would be the matter of getting our newsboys on the train educated up to sell-

ing a nickel's worth of honey just as they sell cracker-jack, chewing-gum, and a dozen other things? Let the boy explain that this is guaranteed to be absolutely pure honey. Let the grocer tell the same thing to his trade. Let there be printed matter showing how it is put up, and why honey candies.



AIKIN'S PAPER-BAG HONEY-PACKAGE FOR CANDIED HONEY.

I do not believe in going back on bottled honey or comb honey; but let us cater to all kinds of trade and demand of a legitimate character. In our exhibits of honey let us show the beautiful white combs in sections—clear sparkling honey in bottles, in tins, and, last of all, hold up to the unsophisticated public another form of honey in paper bags. Explain that it is pure, and then say that honey in that form is the cheapest sweet, and perhaps you may say the purest; for only the very best of any extracted honey will candy, the thin and watery portions usually draining off.

I suggest that our readers try this bologna-sausage package. They should get the bags and learn just how to put the honey up. Set it outdoors where it will quickly candy when the weather is cold; and when it turns to a nice compact solid, just try your local trade. But do not fail to post the retailer on the merits of the goods.

I tried to engage quite a quantity of Aikin's bologna-sausage honey; but out of his crop of 23,000 lbs. he has only a little left, and he explained that he could send only a little. He had practically sold all out, and he could not get enough of it. Colorado honey was a rather scarce article last season, as our readers may possibly know.

It is possible that Eastern honey would not candy quick enough to make the bologna sausage practicable in the East. The dry climate of Colorado, and its beautiful alfalfa that candies so quickly, make the bologna-sausage package one of the best novelties ever introduced in the State. There are other States, like Texas, California, Utah, Idaho, and Montana where such a package would be a perfect success, even if it could not be made a commercial possibility in the so-called rain-belt of the East.—Ed.]

[*Later.*—Just after the foregoing was written I sent one of these packages of bologna-sausage honey by mail to Dr. Miller. I gave instructions to the mail clerk to give it no special wrapping, but merely to cover it with strong paper, tie it, and put on the necessary postage. My idea was to see whether honey could be sent that way in 2-lb. packages by mail, without endangering Uncle Sam's mail-bags. There certainly would be no trouble during cold weather, and I do not think there will be much during summer. Knowing Dr. Miller to be somewhat opposed to candied honey I sent this sample, thinking that it would go a long way toward convincing him of the

marketability and edibility of this form of bologna-sausage honey. In writing about some other things in a private letter he has this to say about the bologna-sausage honey, and it speaks for itself:]

As to Aikin's "bologna sausage," I have read what he has written on the subject, and heard him talk about it, but never took such a great deal of stock in it. But a live specimen of the article on the table before me during one meal has converted me.

Heretofore my view has been about this: "Yes, it saves money to use paper for the package, and so it can be sold for less, and thereby the consumption may be a little increased, but that's all that can be said in its favor. I don't like the granulated as well as the liquid article, and most people are of the same mind."



AIKIN'S PAPER-BAG HONEY-PACKAGE DISSECTED FOR THE TABLE.

But the "sausage" was before me, and it was only fair to give it an impartial trial. I took my penknife, slit down the paper in three or four places, peeled it off, and left lying on the plate the honey, looking much like a brick of butter. Right then and there I was strongly impressed with the *convenience* of the package; and not only that, but the convenience of the honey after the paper was removed. Indeed, I think Bro. Aikin has been some-

what remiss in not making more of this matter of convenience.

The simple matter of peeling off the paper is more convenient than getting candied honey out of any other package whatever. On the whole it is doubtful whether any package of liquid honey can claim the same convenience. The paper peels off clean without any waste, and can be thrown into the fire. Empty liquid honey out of any package, and unless a good bit of time is taken there will be waste.

The convenience continues after the package is skinned. The whole brick may be left on the plate; but it is, perhaps, better to take off a slice, just as you would of butter, say a quarter of a pound or so. Then with a knife on the plate to go with the honey, let it be used exactly as butter, and the convenience over liquid honey will loom up. Help yourself to liquid honey, and if you are not an expert you will have it stringing over the table. No matter how expert you are, you will have trouble in getting just the amount you desire. With the candied honey *on a plate*, you can gauge the amount you take just as easily as if it were butter.

Then it is more convenient to get on bread the candied honey in just the amount you want, and *just where you want it*. When using liquid honey on bread I do not always succeed in keeping it from getting on my fingers; and one of the things that I abominate is honey on my fingers. Sometimes I get the honey in my whiskers, and I feel pretty sure I should get my mustache daubed with it if my face were decorated with an ornament of that kind. With candied honey there is no more trouble than with butter.

But when all is said about the matter of convenience, it is candied honey after all, and I didn't like candied honey. Now I am ashamed to make the confession, but I may as well be honest, and confess that, although I am a man full-grown, I had never before thoroughly tested candied honey. On this particular evening, however, I determined to go the whole figure, not merely using the candied honey on a single mouthful of bread, but on several slices. *I liked it*. I couldn't see but that I liked it just as well as liquid honey, although it was a superb sample of honey, and perhaps it was not just the fairest test. It came to me from Medina, but I *think* it was put up by Aikin. If it was a fair sample of what he is dealing out to customers with little means, I do not wonder he can work up a trade.

Now don't be too hard on me for being so prejudiced that I *thought* I didn't like granulated honey, when all the time I really didn't know. I suspect that a large number of people in the world are in the same boat, and all that is needed to convince them of their error is to get them to give the matter a fair trial. And it may be that the "bologna sausage" is the best thing to help secure that trial. C. C. MILLER.

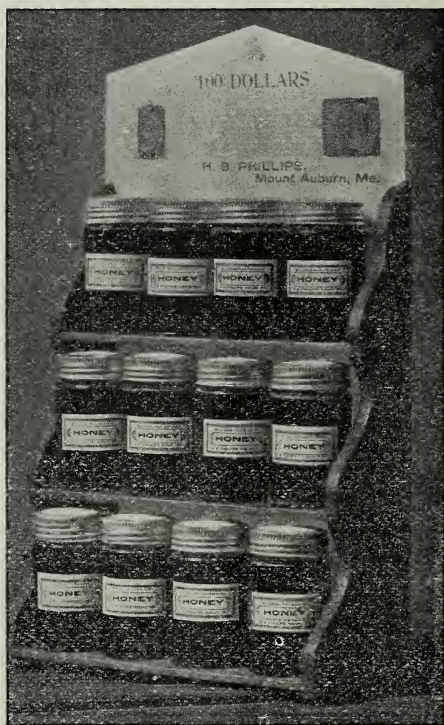
Marengo, Ill.



I send you, under separate cover, a photo of my honey-stand. It is made of white-wood, and finished in its natural grain. The sides are $\frac{1}{2}$ inch thick, and shelves $\frac{1}{4}$ inch. The display card on top of the stand gives my guarantee for the honey I sell; also a few facts about extracted honey. I have used these stands for nearly three seasons, and they have more than doubled my sale of honey. The merchants are pleased with them, and give them a good place on their counters.

Auburn, Me.

H. B. PHILLIPS.



[Mr. Phillips sends a printed letter to the merchant, offering him a honey-stand free of charge on the receipt of an order for six dozen jars of honey. As the honey is heated and sealed air-tight it is not expected to candy; but if it does it will be replaced with that which is liquefied. The jars are returned to the merchant from the consumer, who receives 3 cents for them, and the merchant in turn sells them back to Mr. Phillips for $3\frac{1}{2}$ cents.]

This stand looks very much like the Williams stand as shown in the A B C of Bee Culture, under Extracted Honey.—ED.]

WILL THERE BE FIGHTING AT THE SECOND DRIVE IN FORCED SWARMING? TINNED WIRE FOR BINDING GLEANINGS.

In brushing swarms, when the second drive is made after all the brood is hatched will the bees of the first drive not kill the bees that are being run in the second time? I should like to know how to manage that part of it, as I don't want any increase.

Did you ever hear of sewing the back numbers of a book with tinned wire? It is a better binding than wire nails, as they are too stiff. C. BLAKE.

Wilbur, Ont., Feb. 10.

[As a rule there will be no fighting at a second drive, and especially so if both lots of bees be smoked before the union takes place. One should be careful, of course, that the second lot of bees should not have a virgin queen or something they recognize as such. If they have one, and there is no choice between the old and the one furnished by the second drive, brush them together, for the bees will take one of the queens, disposing of the other.]

Your scheme of binding with tinned wire is excellent, I believe.—ED.]

HOW TO MOVE BEES A SHORT DISTANCE; ARTIFICIAL BEE-PASTURAGE.

1. I wish to move and change my bees in the apiary to which they belong. They are too close together, and face the east. I want to change them into rows facing south. When and how is the best way to do it?

2. What is the matter with motherwort for a honey-plant? I see you don't give it in the A B C of Bee Culture.

3. In the spring, when bees are getting some pollen and little honey when feeding, ought it to be done at night, so as not to bother them from working? Does feeding make them lazy about working on plants.

Jamesport, Mo. J. W. BALDWIN.

[1. If the bees have been confined in hives outdoors for two months at a time, or, better still, if they have been in a cellar all winter, they can be set on their summer stands next spring anywhere without any trouble; but if they have a flight every week or so, so that their locations are fairly well fixed, it would not be advisable to make a slight shift of the hives.]

2. Motherwort is a fairly good honey-plant if there could be enough of it found growing wild on waste land. It very seldom cuts any figure in the hives, because there is so little of it. We once had quite a patch of it on our honey-farm; and, while the bees were very busy on it, we found it would be too expensive to furnish artificial pasturage of this kind to take care of an apiary. The land could be more profitably used in growing something that would fur-

nish hay, fodder, or seed, as well as nectar. It is an established rule that it does not pay to plant any thing for honey unless the crop, aside from the honey, will pay the expense of cultivation. In this list we can include alfalfa, buckwheat, rape, and white, red, and crimson clover. Where there is a great deal of waste land that is growing up to weeds, one can, to some little advantage, scatter sweet-clover seed, and perhaps catnip; but he will have to do a tremendous lot of scattering before he begins to discover any effect in the hive. Dr. J. L. Gandy, of Humboldt, Neb., has probably done as much as any one in this line; but it is to be doubted whether he has been able to increase his honey crop materially by scattering seeds of good honey-plants.

3. Yes, it might be advisable to feed at night; but in case the bees are not disposed to forage as much as they should, a little stimulative feeding during the day will make them rush into the field to discover the source of this new supply. Ordinarily bees need no stimulating of this kind.—ED.]

YELLOW BUTTERFLIES NOT ENEMIES OF THE ALFALFA-PLANT.

Mr. Root:—The yellow butterflies (species of colios) never injure clover of any kind, nor any plants. They sip nectar from flowers, and may and do aid some in pollination. The caterpillars do at times eat from the clovers; but, so far as I have ever observed, they are never abundant enough to do any considerable harm. I know of only two serious enemies of alfalfa—gophers and goldthread, or dodder.

Claremont, Cal. A. J. COOK.

[It was probably a mistake in supposing that the yellow butterflies had any blighting effect on the blossoms of the alfalfa. The fact that they swarmed over the fields of it in countless thousands, so that the air was yellow with them over the fields, shows that they were after the nectar as well as the bees, and to the extent that they robbed the bees of just so much honey, to that extent they were an enemy to the bee-keeper. We are obliged to Prof. Cook and others for the correction.—ED.]

THE QUICKEST METHOD OF INCREASING.

1. What is the best way of increasing the number of hives in a small yard to the largest number possible, in as short a time as possible?

2. By the method that you will likely mention, what number could you reach in one season, providing you started with 20 fair colonies and the season is favorable?

Addison, Ont., Feb. 13. A. G. LEE.

1. Almost any standard method of forming nuclei will give you good results. These have been given so often in our columns that it would be unnecessary to repeat them here.

2. I do not know what could be done; but I once took 12 colonies, and without any

feeding increased them to 100 strong colonies, and secured about 1000 lbs. of extracted honey. This was done at an outyard which I visited on a bicycle once a week, during the season, spending about four or five hours each trip. If one practices stimulative feeding—feeding before and after the honey-flow—he could, if he had the requisite skill, go beyond this. At the time I made this increase we had a good season for honey, and ordinarily I should not expect to do as well.—ED.]



How then shall they call on him in whom they have not believed? and how shall they believe in him of whom they have not heard? and how shall they hear without a preacher?—ROMANS 10:14

One Saturday afternoon Mr. W. W. Somerford (the "man who talks," as poor Rambler had it) came to our rooms (No. 89 Prado), and said we were to go out to his place on our wheels that evening, and that he would then, Sunday morning, take me over to Mr. Fraser's mission at Guanajay. You may think it funny, but Guanajay is usually pronounced "Wah-nah-high." In Spanish, *gu* is given much the sound of *w*, and *j* is always called *h*, or given the sound of *h*, and the accent is on the last syllable.

It was so late before Somerford got ready to start, darkness overtook us; but before it was quite dark we stopped to look over an apiary that has quite a history. Our older readers may remember that, years ago, A. J. King, of the *Bee-keepers' Magazine*, came to Cuba to start an apiary on what was then considered a pretty large scale, for the Casanova Brothers. It was about the time I commenced sending out the "Simplicity" hive, or hives made so they could be piled up two, three, or even four stories high. The Kings made a hive similar, and called it the "Eclectic" hive. For shade, the wealthy owners made sheds of galvanized iron, supported on iron posts, and these sheds are standing to-day, not only durable, but artistic and neat in appearance. After the Kings left Cuba, Osborne (formerly of California) took charge of this apiary, and it was here he ordered from us the largest extractor in the world, to be run by a steam-engine. I saw the engine and the great "Jumbo" extractor; but both are now standing idle, while a Cuban takes all the honey with a common small extractor to be turned by hand. This once beautiful apiary that cost so much money is now very much on the road to ruin.

After we took the road we had both darkness and rain, and I should have given up getting home until Sunday morning, but not so our good friend S. He is not only a "talker," but he is a "pusher" in any thing he starts out on. For a time it seemed as if we could not keep our wheels un-

der us, they slipped about in the mud so badly; but S. declared a little further on the roads were of a different character, and so it proved. His bright little wife was taken rather by surprise to see a visitor covered with mud ushered in late Saturday night, and she made quite an apology because my bedroom was so filled with crates of beautiful section honey I could hardly get into it. I replied something like this: "When I first became crazy on bee-keeping, long years ago, I used to dream of great piles of beautiful honey in neat little packages. It was only a dream, however, then; but now, to-night, should I wake up and see by the bright moonlight what is all around me, I might, for the first time in life, find my boyhood dreams *all realized*; therefore, dear Mrs. S., do not feel at all worried, even if I do have to turn 'edgewise' to get to that pretty little washstand when I get up in the morning."

Mr. S. has something new in bottom-boards for hives. His are made of stone, or, rather, of the material they make the tiles of for roofing their houses. They are made at a tile-factory, and cost only about ten cents each. They can be set close to the ground, and never rot or warp. He was then filling an order for "chunk honey" in square cans. He has large screw caps put on the cans (six inches or more across); and after the can is filled with pieces of comb honey, extracted honey is poured over and around it, and he said he was then getting more per pound for it than other bee-keepers were getting for comb honey in sections. I presume, however, this demand did not continue; for while I write I am told he is in New York marketing that nice honey that filled my bedroom that night.

Sunday morning Mr. S. and his wife on their tandem, and Mr. Hill and myself on our wheels, all started on the beautiful calzada (government stone road) for church and Sunday-school, nine miles away. On these beautiful stone roads, graded so as to have no hills that one can not run up and down without trouble, it is no task at all to go on a wheel ten miles to church. I have several times "reeled off" a mile every 5 minutes. At every kilometer (pronounced here *klo-m-eter*), there is a stone post with big plain black figures, numbering the distance. A kilometer is about two-thirds of a mile, and these "mile posts" are *exceedingly* convenient. I think Bro. Fraser will excuse me if I say right here that I am *very much* in love with himself and his good wife. One explanation is that, before I met them, I was hungering and thirsting to see some kind of mission work going on in Cuba. Mr. Somerford told me Fraser was a man after my own heart, and also that, in his opinion, he was one of the very *best* men in the world. Mr. Fraser has been on the island three years, under the auspices of the American Missionary Society. He has a very pretty building near the center of the town, that contains the schoolroom, library, and a very pretty home for his family. He

has Sunday-school and preaching every Sabbath, and, I think, a Thursday-evening meeting; then there are two free evening schools during the week, to teach English, to any one who may want to learn. I have been there two Sundays, and have at each service talked to the children and people, through Bro. F. as interpreter. My eager desire to know them and learn their language was met by them perhaps more than half way. It may seem a little extravagant for me to say it, but it seemed a good deal like "love at first sight," on both sides. They were mostly children eager to learn, and for *their sakes* I became a child too for the time being. There were some fathers and mothers present, and they soon became warm friends of mine because of my anxiety for the best interests of the children. I asked how many had Bibles, Testaments, or parts of Bibles, that they could read every day. Almost all raised their hands. Brother F. said they regarded the lesson-papers and cards with texts on as a part of the Bible. When I asked how many read something from the Bible every day, they almost all raised their hands. I told them of the happiness I found in reading my Bible every day in Spanish, and advised them in a like manner to learn to read the Bible in English. I told them it was a sad fact that there were some very bad words in English, but I *hoped* there was nothing to correspond in Spanish. There was some sad shaking of the heads, however, as they thought the matter over. I have been assured, however, that profanity and blasphemy are not nearly as common in Spanish as among the Americans. If this is true, dear friends, shall we not all try *very* hard to avoid teaching this great evil while we give them English that they may get what is good? They (especially the children) are looking to me to teach them what is new and what is valuable. May God help America to use this great opportunity to teach, to give them *only* what is good and pure. I asked if it was possible to "tell lies" in Spanish, as people do in English. A very bright-looking business man said, "Tell Bro. Root that the very same words that are used to tell the *truth* can also be used to tell *lies*."

One great feature of the work is singing Gospel Hymns. When words are sung, there is plenty of time to give a full and correct pronunciation to each one. I am quite sure no music was ever sweeter and more touching to me than to hear those childish voices express the beautiful sentiment of these hymns in the Spanish tongue. At the close of the service the roll is called, and each one responds with a scripture text. There were 94 enrolled, and something like 80 present; and I do not remember that a single one, young or old, failed to repeat a text. They were on hand, many of them, long before meeting time, and a crowd was always in the street before the open windows during each session. Several lingered after meeting to practice

hymns. On one of these occasions two bright young men sang several Gospel Hymns with me, first in English, then in Spanish. They corrected my pronunciation, and then in turn I corrected theirs. While their awkward attempts to speak our words as I spoke them made me laugh, it drew my heart toward them in a way I have never felt before. I *know* they will be honest and true, for the love of Jesus Christ, that love that "surpasseth all understanding," is in their hearts. One of them said, as we closed our mutual lessons, something like this:

"Mr. Root, I am glad you came here. I hope you will come again—often. It gives me much pleasure to know you."

May the dear Savior guide, direct, and keep Florentina in his efforts toward a new life, and in his desire to learn all that is good and pure and true. At one of the week-day meetings Bro. F. put on the blackboard the first verse of the Gospel Hymn, "Wonderful Words of Life:"

Sing them over again to me,
Wonderful words of life;
Let me more of their beauty see,
Wonderful words of life.
Words of life and beauty,
Teach me faith and duty—
Beautiful words, wonderful words,
Wonderful words of life.

It was very plainly written, and one pupil after another came up and stood before the board and read it aloud in English. With some prompting, all got through with it. Many had to try again and *again* after their patient (and loving) teacher; but the final was when they all joined together with enthusiasm and *sang* the verse through. I did not know what the custom was, but I could hardly resist showing them *my* appreciation of their efforts by clapping my hands. It seems they understood it, for I got a volume of thanks, expressed in different Spanish words and phrases.

Now, lest I am giving the bright side too much of all this mission work, I might add that there is considerable noise and disorder in all their exercises. Brother F. was inclined to feel troubled about this; but I said, "Never mind the noise. A noisy school is far better than a dull sleepy one." He told me, however, that, just before I came the second time, some boy fixed a pin so as to stick out of the toe of his boot. This he pushed up through the cane-bottomed chairs so as to make people jump; and the trick was played, not only on the *boys*, but on *young ladies* as well. Mr. F. did not get hold of the guilty one, but he gave the whole school such a "lecture" that it stopped at once.

The great Father has not made us all alike. Some have remarkable talents in one direction and some in another, but this dear brother has a remarkable gift for this kind of work. I thank God that he has given me such a love for my fellow-men that I can at least appreciate and see something of the outcome that is likely to follow such undertakings.

FOUL BROOD MAY COME

into your apiary when you least expect it. The sooner you discover its presence, the less difficult and expensive will be its eradication. If you know exactly what to do when you discover it, much valuable time may be saved. No better instruction and advice on these points can be found than that given in a five-page article written by R. L. Taylor, and published in the February **Bee-Keepers' Review**. It is comprehensive, yet concise. The description of the disease, the instructions how to detect it, are the best and most complete of any I have seen. No one need be mistaken in identifying foul brood after reading this article.

Mr. Taylor then goes on and tells how to hold the disease in check (a very important point), prevent its

dissemination among other colonies, bring all of the colonies up to the honey harvest in a prosperous condition, secure a crop of honey, and, at the same time, get rid of the foul brood.

If you wish to know how to recognize foul brood to get rid of it with the least possible loss if you wish to be prepared for it should it come, send 10 cents for a copy of this issue of the **Review**. With it will be sent two other late but different issues of the **Review**; and the ten cents may apply upon any subscription sent in within one year. A coupon will be sent entitling the holder to the **Review** one year for only 90 cents.

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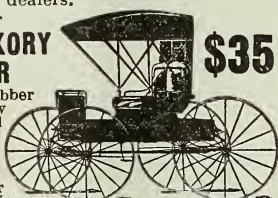
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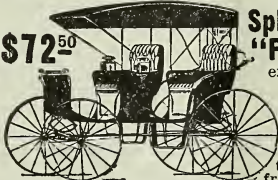
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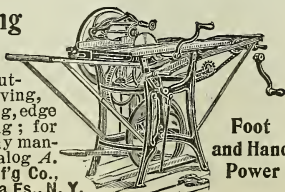
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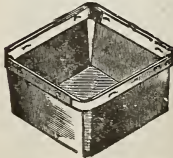
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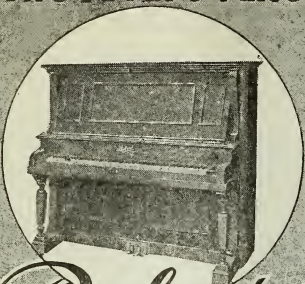
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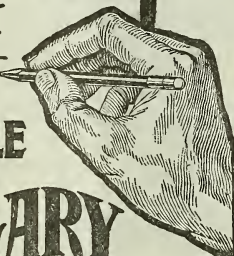
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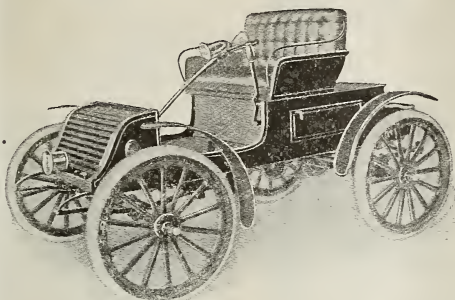
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Friedman Automobile Co.,

3 East Van Buren St., Dept. B, Chicago, Illinois.

The Test of Time

not only proves the increasing popularity of plain sections and fence separators, but the superiority of these supers for the production of comb honey over other styles. The use of Root's Hives with plain sections and fence-separator equipment mean

**Larger Crop,
 Less No. 1 and 2 Grades,
 Satisfied Merchant,
 Increased Sales,**

**More Fancy Grade,
 Better Price,
 Enthusiastic Customers,
 Greater Profits.**

and a ready market the coming season, which is one of the important factors in the building-up of a home market for honey. It is one thing to dispose of a fair grade of honey at a moderate price, but quite another to retain the good-will of the merchant handling your honey. To secure this co-operation and stimulate the trade, great care should be exercised as to the attractiveness of the honey offered. It should not only be "Fancy," but the honey should be well capped, and put up in neat shape. To obtain these results you should use Dovetailed hives and supers equipped with plain sections and fence separators. Insist on Root's make and you will not be disappointed.

The A. I. Root Company, Medina, Ohio.

N. B.—If you are not posted as to where you can buy Root's Goods advantageously, write ns. Ask also for catalog of Bee-keepers' Supplies and specimen copy of Gleanings.

APPLE TREES

This spring finds us with an unusually large stock of extra fine young trees. Every tree **guaranteed** on a whole root, free from disease, smooth, vigorous, shapely. We want to supply you this spring from this matchless stock.

Summer Apples.

Yellow Transparent, Red Astrachan, Summer Rambo, Red June, Early Harvest, Golden Sweet, Early Strawberry, and others.

Fall Apples.

Maiden's Blush, Gravenstein, Fall Rambo, Fallwater, Haas, Duchess of Oldenburg and others.

Winter Apples.

Jonathan, King, Limber Twig, Missouri Pippin, Northern Spy, N. W. Greening, R. I. Greening, Rome Beauty, Stark, Scott's Winter, Smith's Cider, Tallman Sweet, Wine Sap, Willow Twig, and every other kind worth planting.

We believe that our spring of 1903 apple stock cannot be equalled anywhere. We pack so there can be no injury in shipping. **Absolutely safe arrival guaranteed** anywhere in the United States.

REMEMBER

we are headquarters for Peach and Kieffer Pear Trees, Strawberry Plants, Asparagus Roots, etc. New spring catalogue mailed free. Write at once for **special apple list**.

HARRISON'S NURSERIES,

Box 58

Berlin, Md.

SEEDS, PLANTS, ROSES;

Bulbs, Vines, Shrubs, Fruit and Ornamental Trees



The best by 49 years test. 1,000 acres, 40 in hardy roses. 44 greenhouses of Palms, Ferns, Pines, Geraniums, Everblooming Roses and other things too numerous to mention. Seeds, Plants, Roses, Etc., by mail postpaid, safe arrival and satisfaction guaranteed. Elegant 168 page catalogue free, send for it

and see what values we give for a little money; a number of cheap collections of Seeds, Plants, Trees, Etc., offered which will interest you.

THE STORRS & HARRISON CO.,
Box 174, PAINESVILLE, OHIO.

A WOMAN FLORIST

6

EVERBLOOMING
CARNATIONS

THE GEM SET for 25 Cts.

Mrs. Lawson, largest pink
White Cloud, purest white
Estelle, dazzling scarlet
Armazindy, white and red
Morning Glory, satin pink
Abundance, deep rose



All will bloom this Summer.

Send 25 cents for the above Six Colors of Carnations.

Some Special BARGAINS in Flower Collections

5 Lovely Tea Roses, will bloom all summer	25 cts.
8 Prize-winning Chrysanthemums, World-beaters	25 cts.
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Guarantee satisfaction. Once a customer, always one.
Catalog FREE.

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is the life of advertising—it is also the life of the largest mail-order seed trade in the world—

BURPEE'S!

Were it not for repeat-orders every year from satisfied planters we could not supply the

Best Seeds that Grow

at such moderate prices. We want every one who appreciates quality to write for Burpee's Farm Annual for 1903. Long known as "the Leading American Seed Catalogue," it is better now than ever before. An elegant book of 184 pages, with beautiful colored plates and hundreds of illustrations, it tells the plain truth. Write to-day! Do not delay! It's FREE.

W. ATLEE BURPEE & CO., Philadelphia

Seed Oats

65c a bu. and up.

The cleanest, heaviest, best

yielding oats are Michigan Northern Grown. Hammond's Nameless, Hammond's English Wonder, Earl of Russia, and Michigan Wonder, the four best varieties. Rust proof, stiff straw, have yielded 220 bu. per acre. Catalog describing these oats and all other farm seeds free on request.

HARRY N. HAMMOND SEED COMPANY, Ltd.

Box 69, Bay City, Mich.

A NEW STRAWBERRY.



Estimated yield 700 bu. per acre. Netted \$400.00 per acre for us. Beautiful, round as an orange, large, good quality. 75 other varieties. Many new Raspberries, Blackberries and other fruits, especially some new apples. Our new Catalogue tells all about it. Sent free.

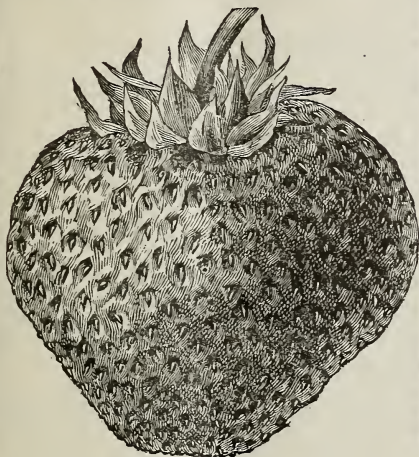
W. N. SCARFF,
New Carlisle, Ohio.

One Cent buys a postal card

which will carry your address for

Great Crops of Strawberries

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The best book on strawberry-growing ever written. It tells how to grow the biggest crops of big berries ever produced. The book is a treatise on **Plant Physiology** and explains how to make plants bear **big berries and lots of them**. The only thoroughbred scientifically grown **strawberry plants** to be had for spring planting. One of them is worth a dozen common scrub plants. They grow **big red berries**. There is **GOLD** in strawberries and bees if you go at it right. The book tells how to dig it out. The book is sent free to all readers of GLEANINGS IN BEE CULTURE. Send your address to me.



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Strawberry Plants and Seed Potatoes.

How to Grow Biggest Crops.
Finest Fruit.

DESCRIPTIVE CATALOGUE FREE.
Send for it. Bargains in New Varieties.

FLANSBURGH & PEIRSON,
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BEST SMALL FRUITS.

Standard and improved varieties of Raspberries, Blackberries, Gooseberries, Currants, Grapes, Strawberries, etc. Every plant grown and guaranteed by me. Ship only clean, vigorous, well rooted, fresh dug plants that give results. Write for late catalog.

Allen L. Wood, Wholesale Grower, Rochester N.Y.

210 Kinds for 16c.

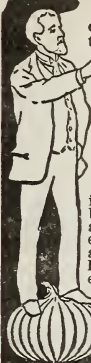
It is a fact that Salzer's seeds are found in more gardens and on more farms than any other in America. There is reason for this. We own and operate over 5000 acres for the production of our choice seeds. In order to induce you to try them we make the following unprecedented offer:

For 16 Cents Postpaid

25 sorts wonderful onions,
25 sorts elegant cabbage,
15 sorts magnificent carrots,
25 peerless lettuce varieties,
25 rare luscious radish,
20 splendid beet sorts,

75 gloriously beautiful flower seeds,
in all 210 kinds positively furnishing bushels of charming flowers and lots and lots of choice vegetables, together with our great catalogue telling all about Macaroni Wheat, Billion Dollar Grass, Teosinte, Bromus, Speltz, etc., all for only 16c. in stamps and this notice.

Onion seed at but 60c. a pound.
JOHN A. SALZER SEED CO.,
La Crosse, Wis.



The Century Sprayer

a small out of which is shown in this advertisement, offers more advantages to the orchardist, fruit grower, etc., than any other spraying outfit on the market.



Brass cylinder, brass valves, "everlasting" fabric plunger packing and the only thoroughly reliable agitator.

Cylinder 2 1/4 ins. stroke 5 ins. Then, too, it sells at a lower price than other good pumps. Send for handsome free catalogue, showing full line of pumps and twenty varieties of sprayers.

THE DEMING CO., Salem, O.
Western Agents—Henion & Hubbell, Chicago, Ill.

LOW RATES WEST

Only \$33 Chicago to San Francisco, Los Angeles, Portland Tacoma, Seattle, and many other Pacific Coast points, every day February 15 to April 30, 1903. One-way, second class, colonist rates via Chicago, Milwaukee & St Paul and Union Pacific line. To the Northwest via this route, or via St. Paul. Additional information on request.

F. A. MILLER, Gen. Passenger Agt., Chicago.

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To make cows pay, use Sharples Cream Separators. "Business Dairying" and cat. 288 free. W. Chester, Pa.

Free to All Housekeepers

The "1900" Ball-bearing Family Washer Saves Time, Money, and Worry; Most Perfect, Simplest Washer Known; No More Stooping, Rubbing, Wearing-out, or Boiling Clothes.

A FAIR AND SQUARE PROPOSITION

In Order to Prove to the Most Skeptical that the "1900" Ball-bearing Family Washer is Unquestionably the Greatest Home Labor-saving Machine Ever Invented, We will

SEND YOU ONE ABSOLUTELY FREE

without deposit or advance payment of any kind, Freight Paid, on 30 Days' Trial. If you like it you can pay for it in cash or on the installment plan at the end of 30 days. If you don't like it, all you have to do is to ship it back to us at Our Expense. You run no risk, no expense, no obligation whatever.



The 1900 Ball-bearing Washer is unquestionably the greatest labor-saving machine ever invented for family use. Entirely New Principle. It is simplicity itself. There are no wheels, paddles, rockers, cranks, or complicated machinery. It revolves on Bicycle Ball-bearings, making it by far the easiest-running washer on the market. No strength required; a child can operate it.

No more stooping, rubbing, boiling of clothes. Hot water and soap all that is needed. It will wash large quantities of clothes (no matter how soiled) perfectly clean in 6 minutes. Impossible to injure the most delicate fabrics. Saving in wear and tear of clothes, to say nothing of the saving in soap and materials, pays for machine in a short time. Don't be prejudiced. This is entirely different from and

far superior to any other washing-machine ever made.

Read These Convincing Testimonials:

A Day's Wash in Three Hours.

Sherwood, Md., Jan. 15, 1901.

The washer I received from you is the best I ever saw. It will do all you claim for it. I can do the washing in three to four hours, where it took a colored woman a whole day to do it. We have ten boys and three girls, and you can judge from that that we have large washings. Myself and daughter would not part with this machine for twice what it cost. We live on a farm.

MRS. LEVI H. HARRISON.

Greasy Overalls Washed Clean.

San Francisco, Cal., Dec. 25, 1899.

1900 Washer Co. Gentlemen: I received the washing machine in good order on the 15th inst. My wife had saved three weeks' washing to try it. She commenced washing at seven o'clock, and at eleven all the clothes were on the line. It would have taken two days to do all this work the old way; and the washing was done clean. Greasy overalls, which I use in the engine-room, could not have been done nicer in a steam laundry. She would not part with the washer if she could not get another like it, if she was offered \$100.

Yours truly,

CHAS. BLUM, Marine Engineer,
1006 Channing Way, West Berkeley Cal.

Fifteen Machinefuls in Four Hours.

Chicago, July 13, 1900.

Last week I started to wash with your 1900 Ball-bearing Washer. A neighbor saw me wash my little boys' waists (which were terribly dirty), and we were both surprised to see there was not a spot left. On Monday we did a big wash of 15 machinefuls, and the work was done in four hours. It is the best machine I ever saw, and I have tried many. It works so easy my little boy can run it.

MRS. A. H. CENTNER,
636 Diversey Boulevard

It is a Wonder.

Savannah Yacht Club, }
Savannah, Ga., Jan. 21, 1901 }

After a thorough trial of your 1900 Washer on all kinds of washing, I think you have a "wonder." We have a very large washing and have always had two women on Monday, and one to finish on Tuesday. Our washing cost us \$10 per month. With your washing-machine, our cook and the yard boy did the washing in four hours, much better than it was done before. Your machine is all that you claim for it.

W. M. KIDWELL, Supt.

Costs nothing to try. Sent to any one absolutely free for a trial of 30 days. We pay freight both ways. No money required in advance. Send for book and particulars to

The "1900" Washer Co., = 295 H State Street, = Binghamton, N. Y.

Buy Your Bee-supplies of S. D. Buell!

You can save money. He handles The A. I. Root Co.'s Supplies. Send list of goods wanted, and let him quote you prices. Send for catalog.

S. D. Buell, Union City, Mich.

\$3.00 Quality Eggs \$1.00 per Setting

to every reader of this paper who sends us an order this month 25 varieties of thoroughbred poultry. Every first and second on Buff Leghorns Orpingtons, and others at four shows last fall. Catalog for stamp. E. R. Philo Poultry Association, Salem, New York.

WE WILL SAVE YOU FROM \$10 TO \$45 on almost any kind of machine. **Swell, Front**
 Sold direct from factory saving all salesmen's expenses and dealers or agents exorbitant profits.
 Our machines have modern features not possessed by any others. **Ball-Bearing**
Stand; finest attachments FREE. Latest design woodwork, the stylish
swell front, polished oak. Guaranteed to be better than machines sold for
twice the price. SHIPPED ON APPROVAL anywhere in U. S. Guaranteed 20 years.

ARLINGTON GEM \$25.00 Regular 5 drawer Drop Head \$11.25
 Including all attachments.

ARLINGTON QUEEN Flat Tension and Needle Bar

Take-up, same as New Home, Domestic and White.

\$85.00 Regular 5 Drawer Drop Head \$14.75

with fine Marquetry Decorations.

\$45.00 Beautiful 1 Door Desk Cabinet \$16.45.

Write for our Catalogue, 64 pages beautifully illustrated. Contains all points about buying Sewing Machines right—FREE.

ARLINGTON Highest arm made, Disc Tension. Independent take-up.

same as Singer, Wheeler & Wilson and Standard.

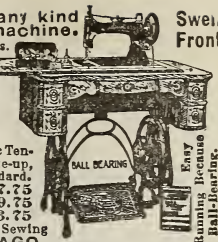
\$55.00 Regular 5 Drawer Drop Head \$17.75

\$65.00 Automatic Lift, Drop Cabinet \$19.75

\$75.00 Beautiful 2 Door Desk Cabinet \$28.75

Write for our Catalogue, 64 pages beautifully illustrated. Contains all points about buying Sewing Machines right—FREE.

CASH BUYERS' UNION, Dept. B 245 CHICAGO.



Queens == 1903 == Queens.

We have ten different yards five to twenty miles apart, where Italians, Cyprians, Holylands, Carniolans, and Albinoes are bred for business. Tested queens, \$1.50; \$8.00 for 6; \$15.00 per dozen. Untested, \$1.00 each; \$5.00 for 6; \$9.00 per dozen. Our best and finest breeders, \$5.00 each. One and two frame nuclei a specialty. Bees and Queens in any quantity to suit purchaser. Safe arrival and reasonable satisfaction guaranteed.

The Jennie Achley Co., Box 18, Beeville, Tex.

Carniolans and Italians. Choice Queens a Specialty.

Having added extensively to our queen-rearing plants in the North and the South we can furnish any number of queens on short notice.

Carniolans. Very prolific, hardy, gentlest bees known. Great comb builders. Sealed combs of a snowy whiteness. A worker on red clover.

Italians. Gentle, prolific, swarm very little, fine workers, and a red-clover strain.

The Carniolan-Italian Cross. A cross giving the combined qualities of each race, are hustling workers, the coming bee for comb honey.

1 untested queen, \$1.00; 6 for \$5.00; 12 for \$9.00. Tested, \$1.50. Best breeder, \$3.00. Best imported breeder, \$5.00. For full colonies, one or two frame nuclei, large orders for queens, send for descriptive price list. Orders booked now will be filled when desired.

F. A. Lockhart & Co., Caldwell, N. Y.

\$QUEENS--\$BEES--NOW.

A. L. Swinson, Queen-breeder, furnishes best to be had in U. S. First-handed, Warranted queens, \$1.00. Tested, \$1.50. Breeders, \$5 to \$10 American Albino Italians, and Adels mated to Albinoes.

SWINSON & BOARDMAN,
 Box 358, Macon, Ga.

100 BASSWOOD or LINDEN, \$2.00

Prepaid to any address in the U. S. This is the tree that bee-keepers have long wanted. We have a big supply of 6x12 inches, and will bill all orders promptly as above. Easy and fast growers. Basswood blossoms make the most and best honey. Order as many as you want, but not less than 100. Offer good for spring of 1903 only.

Evergreen Nursery Company, Sturgeon Bay, Wis.

SWEET-CLOVER SEED.

We have a splendid lot of sweet-clover seed which we offer at 11 cents in small lots, or at 10 cents in bulk.

THE SNYDER BEE AND HONEY CO.,
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TREES, VINES, and PLANTS.

Hardy-grown Nursery Stock. Large supply at less than trade prices. Keiffer and Peach Specialties. Send list of wants for quotations.

E. A. BOAL CO., Hinchman, Berrien Co., Mich.

WINTER IN California.

Sunshine and summer, fruit and flowers all winter long in California. The quick way to get there is via the Chicago, Milwaukee, & St. Paul, and Union Pacific line. Three through trains, Chicago to San Francisco, every day.

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Profitable Potatoes

Not an inch of ground wasted.
 Not a seed withered.

Every row planted full count by hand,
 two acres and more a day.

Every piece of seed put into MOST soil

\$1 Acme Hand Potato Planters

Do all this and more. They make your potato fields profitable. Catalog free.

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 TRAVERSE CITY, MICH.



PAGE

WE HEARTILY

recommend Page Fence for the worst breachy stock, and it does just as well for quiet stock.

Page Woven Wire Fence Co., Box S, Adrian, Michigan.

FOR SALE.—Forty colonies Italian bees in 8-frame L. bodies; strong colonies and plenty of honey; satisfaction guaranteed; \$4.00 each, shipped in April and May. W. E. YODER, Lewisburg, Pa.

POULTRY JOURNAL. How to Make Poultry Pay. A paper worth a dollar, but will send it to you one year on trial, including book, Plans for Poultry Houses, for 25c. Sample copy FREE. Inland Poultry Journal, Indianapolis, Indiana.

Counting Chicks Before Hatching
is not safe unless you have an




**IOWA
ROUND
INCUBATOR**

R. C. Bauerminster, Norwood, Minn., got 493 chicks from 503 eggs. He followed directions, the machine did the work, because it was built on right principles and by good workmen. The IOWA has fiber-board case, does not shrink, swell, warp or crack. Regulation and ventilation perfect. Our free book gives more testimonials and full particulars. Everything about incubation free.

IOWA INCUBATOR COMPANY, BOX 197, DES MOINES, IOWA

PER EGG CAPACITY



The Sure Hatch Incubator is a high grade machine throughout, (over 30,000 in use) anyone can operate them, and when it is considered that we pay one freight and that the machines are all larger than rated capacity and are sent on 30 days trial, the egg capacity is the cheapest of any good incubator on the market.

Our Free 1903 Catalogue was made to order for the poultry raisers - poultry and egg record tables, etc. A big book full of good things. Address nearest office.

SURE HATCH INCUBATOR COMPANY.
Columbus, Ohio. Clay Center, Nebr. Eugene, Ore.

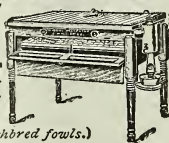
TRY AN IDEAL.

J. W. Miller's incubator—made by the man who knows. It is really self-regulating.

30 DAYS FREE TRIAL

We get no money until you are perfectly satisfied. Poultry Book Free.

J. W. MILLER CO.,
Box 48, Freeport, Ill.
(Poultry supplies and thoroughbred fowls.)



RELIABLE
INCUBATORS and
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Satisfaction guaranteed or your money back. Send 10 cents postage for great poultry book just issued, explaining remarkable guarantee under which we sell. Reliable Incubator & Brooder Co., Box B-49 Quincy, Ill.



110
Yards Fine Poultry.

\$12.80 For 200 Egg INCUBATOR

Perfect in construction and action. Hatches every fertile egg. Write for catalog to-day.

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30 Days Free Trial

The Royal Incubator

Is so good and works so well that we don't ask you to buy it before you try it. Entirely automatic certain in results. May we send you one on trial? Catalogue free.

ROYAL INCUBATOR COMPANY,
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Brings Big Hatches

That's the test of an incubator and that's the record of the

SUCCESSFUL.

SUCCEED WITH A SUCCESSFUL

Don't experiment. Get a time tried and proved incubator. The Successful not only hatches perfectly, but it will last a life-time—does not swell nor shrink. Send 6 cents in stamps to cover actual cost of mailing for Incubator and Poultry Books. Standard Poultry and Poultry Supplies. Books in five languages.

Des Moines Incb. Company,
Dept. 503 Des Moines, Iowa,
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200 EGG SIZE THERE IS ONLY ONE
\$9.50 FOR 100 EGGS **INCUBATOR** **200 PATRONS**
\$5.00 FOR 50 EGGS **TO OUR PATRONS**
SELF REGULATING **GUARANTEED** **SEND 2 CENTS FOR CATALOGUE AND FREE LIST**
BUCKEYE INCUBATOR CO. SPRINGFIELD OHIO.

200 EGG INCUBATOR **8**


By our new plan you can secure our NEW IDEA INCUBATOR at nominal cost. Double Walls, Removable Trays, Nursery Cages, Heater, Improved Tank, Safety Lamp, Regulator. We Can Save You Money. Write for FREE Circular. Address: NEW IDEA INCUBATOR, Box 179 QUINCY, ILL.



GREAT POULTRY BOOK

My 1903 catalogue. Elegant in illustration, full of practical hints, describes 56 breeds of prize winners. Low prices for birds and eggs. Book postpaid, 10 cents. Calendar for 1903 on cover.

B. H. GREIDER, REHMS, PA.



AN EGG MAKER

Nothing equals green cut bone for hens. Any one can cut it with

Mann's Latest Model Bone Cutter.

Open hopper. Automatic feed. 10 Days' Free Trial. No pay until you're satisfied. If you don't like it, return at our expense. Isn't this better for you than to pay for a machine you never tried? Cat's free.


F. W. MANN CO.,
Box 37, Milford, Mass.



WILSON'S
New Green Bone, Shell and Vegetable Cutter for the Poultryman.

Also Bone Mills for making phosphate and fertilizer at small cost for the farmer, from 1 to 40 horsepower. Farm Feed Mills grind fine, fast and easy. Send for circulars.

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THE HUMPHREY
GREEN BONE and VEGETABLE CUTTER

will save half your feed bills and double egg yield. Guarantee 1 to cut more bone, in less time, with less labor, than any other. Send for Special Trial Offer and handsome catalogue.

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Don't pay retail price for carriages or harness. Write for our catalogue and learn about our system of selling direct from factory to customer. Two profits are saved to you. Satisfaction is guaranteed, or you can return the purchase and we will pay freight charges both ways. We have the largest assortment of buggies, surreys, phaetons, carriages, and other high grade vehicles, as well as harness and horse accessories, in America. Write for the catalogue to-day.

THE COLUMBIAN CARRIAGE & HARNESS COMPANY,
Factory and General Office, COLUMBUS, O. } Write to
Western Office and Distributing House, ST. LOUIS, MO. } nearest office.



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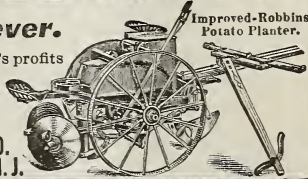
are better than ever.

No. 3 Iron Age Double and Single Wheel Hoe, Hill and Drill Seeder.



Two tools you need now to make this year's profits greater. Write for the new Iron Age Book, showing the full line. Full of ways to save work. FREE.

BATEMAN MFG. CO.
Box 120, Grenloch, N. J.



Seed Corn

\$1.00 bu. and up

Michigan Northern Crown is the earliest and produces largest crops. Hammond's Sixty Day Plant, American Pride, Race Horse Dent and Thoroughbred White Dent are the 4 famous varieties today. American Pride made 197 bu. shelled corn per acre. Fifteen other sorts. 100 page catalogue fully describing these wonderful corns sent on request. **HARRY N. HAMMOND SEED COMPANY, Ltd.**
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450,000 TREES

200 varieties. Also Grapes, Small Fruits etc. Best rooted stock. Genuine, cheap. 2 sample currants mailed for 10c. Desc. price list free. **LEWIS ROESCH, Fredonia, N. Y.**



POULTRY PAPER, illust'd, 20 pages, 25 cents per year. In the trial 10 cents. Sample Free. 64-page practical poultry book free to yearly subscribers. Book alone 10 cents. Catalogue of poultry books free. *Poultry Advocate*, Syracuse, N. Y.

FREE! Pair Most Popular Variety of Chickens



In natural colors. 12 x 18 inches, for framing, mailed in tube, free for 25c. for nine months' trial subscription to *The Feather*. The most beautifully illustrated poultry paper—four in natural colors on cover—16 pages, showing how to make money raising chickens. Regular price, 50c. per year. Satisfaction guaranteed or money refunded.

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Don't Keep Hens

the same old way, while others are getting rich on the new plan. Latest results monthly in gigantic poultry journal. Six mo. trial subscription 10c. for next 20 days. Money back if fully if not delighted. Address, **THIS FOR THAT, 719 Star Bldg., CHICAGO.**



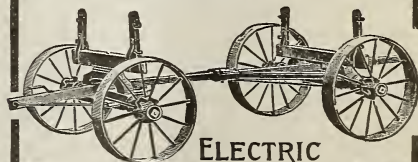
BUILD YOUR OWN INCUBATOR. We sell complete illustrated plans by which a 200 EGG HOT WATER INCUBATOR can be built for about \$8. We furnish Lamps, Tanks, Regulators, etc., at cost. Big money building and selling them. Write to-day for particulars and FREE circular "How to Make and Save Money with an Incubator." **Channon, Snow & Co., Dept. 139 Quincy, Ill.**

Wise Man's Wagon.

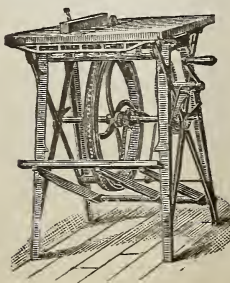
The man who has had experience in running a wagon knows that it is the wheels that determine the life of the wagon itself. Our

ELECTRIC STEEL WHEELS

have given a new lease of life to thousands of old wagons. They can be had in any desired height, and any width of tire up to 8 inches. With a set of these wheels you can in a few minutes have either a high or a low down wagon. The Electric Handy Wagon is made by skilled workmen, of best selected material—white hickory axles, steel wheels, steel hounds, etc. Guaranteed to carry 4000 lbs. Here is the wagon that will save money for you, as it lasts almost forever. Our catalog describing the uses of these wheels and wagons sent free. Write for it. **ELECTRIC WHEEL CO., BOX 95 QUINCY ILLINOIS.**



ELECTRIC



BARNES' Hand and Foot Power Machinery.

This cut represents our combined circular saw, which is made for bee-keeper's use in the construction of their hives, sections, boxes, etc., etc.

Machines on Trial. Send for illustrated catalog and prices. Address **W. F. & Jno. Barnes Co.,** 545 Ruby St., Rockford, : Illinois.

Gleanings in Bee Culture

[Established in 1873.]

Devoted to Bees, Honey, and Home Interests.

Published Semi-monthly by

The A. I. Root Co., - - Medina, Ohio.

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J. T. CALVERT, Bus. Mgr.
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TERMS. \$1.00 per annum; two years, \$1.50; three years, \$2.00; five years, \$3.00, *in advance*; or two copies to one address, \$1.50; three copies, \$2.00; five copies, \$3.75. The terms apply to the United States, Canada, and Mexico. To all other countries 48 cents per year extra for postage.

DISCONTINUANCES. The journal is sent until orders are received for its discontinuance. We give notice just before the subscription expires, and further notice if the first is not heeded. Any subscriber whose subscription has expired, wishing his journal discontinued, will please drop us a card at once; otherwise we shall assume that he wishes his journal continued, and will pay for it soon. Any one who does not like this plan may have his journal stopped after the time paid for by making his request when ordering.



BEEWAX MARKET.

During the past month we have secured over twelve tons of beeswax—the larger portion of his being imported wax from our neighbors in the South. This provides us with a better stock than we have had for some time. We shall need a good deal more before the season is past, and trust that our friends who have it to furnish will send it along whenever they accumulate enough for a shipment. We are paying, till further notice, 20 cents cash, 31 in trade, for average; one cent extra for choice yellow wax.

BUSINESS STILL BOOMING.

Although we have shipped out the past month some eighteen carloads, and have gained a little on the orders, we still have unfilled orders on hand for about a dozen cars, some of which are not wanted at once. We are in position to take care of orders with reasonable promptness where shipments are urgently needed. During the month of March an early-order cash discount of 2 per cent may be deducted on all orders accompanied by remittance. The delay to traffic on the railroads is still quite serious, and it is well not to delay your orders too long if you would receive your goods in season for use.

A NAIL-PULLER FOR A QUARTER.

On receiving a shipment of hives or other goods, how often have you felt the need of a good nail-puller with which to open the boxes without breaking or splitting them? Such nail pullers as were effective have been beyond the reach of most people who have a box to open only occasionally. Here is something that works on the same principle as the best nail-puller, and yet is within the reach of every one. It will be worth all it costs in opening up one shipment of hives. It is nickel-plated, weighs only three ounces, and may be carried in the vest-pocket, yet it is strong enough to draw nails up to two inches. The jaws are bedded over the head of the nail; then with the hammer attached, the nail is easily drawn. The head may pull off from some cement-coated nails, and

then, of course, you can not get a hold on them. Usually the grip is such as to hold the nail under the head, so it is not likely to come off. Price only 25 cts. each; by mail, 30 cents. A heavier size is made that will take 2½-inch nails. Price 35 cents; by mail, 40.

"How to Make Money with Poultry and Incubators"

is the title of the new 1903 Poultryman's Guide and Catalog (496 pages) of the Cyphers Incubator Co. of Buffalo, N. Y. It shows photographic views of the largest and most successful poultry plants in the United States, England, Germany, New Zealand and South America, and contains twelve special chapters, each written by an expert, treating of profitable poultry keeping in all its



branches, as follows: Starting with Incubators, Handling Chicks in Brooder, Feeding Chicks, Duck Producing on Large Scale, Broiler Raising, Profitable Egg-Farming, Egg and Poultry Combination, Egg and Fruit Farming, Scratching-Shed House Plans, Incubator Cellar and Brooding House Plans, Feeding for Eggs, Standard-Bred Poultry. Most valuable book of the kind ever issued. Write to-day for free copy, asking for book No. 74. Sixty pages devoted to illustrated description of Cyphers Non-Moisture Incubators, Apartment Brooders, Poultry Foods and Clover Products.

Wants and Exchange.

Notices will be inserted under this head at 10 cts. per line. You must **SAY** you want your adv't in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To buy up 50 to 300 colonies of bees.
J. W. WARNER, Box 20, Constance, Ky.

WANTED.—To sell a Barnes machine of latest model cheap.
G. F. TUBBS, Annin Creek, Pa.

WANTED.—To sell fine Early Michigan seed potatoes \$1.00 per bushel.
JOSEPH SOWINSKY, New Era, Mich.

WANTED.—To print your return envelopes, 25 white XXX No. 6, for 10c. THE BEE FARMER, Woodstown, N. J.

WANTED.—Two men with families, to work on farm and keep bees on shares. Every thing furnished must be o. k. T. J. PENICK, Williston, Tenn.

WANTED.—To sell 3000 No. 1 Ideal sections, 3½x5x 1½ with open top and bottoms, for \$4.50. Sample free. GEO. H. DENMAN, Pittsford, Mich.

WANTED.—A hustling, honest, temperance man to work on my farm and to peddle vegetables.
H. W. HOAR, Rangeley, Me.

WANTED.—To sell extra good catnip seed; 10 cts. an ounce or 3 ounces for 25 cts.; 1 lb., \$1.15.
O. S. HINSDALE, Kendrick, Idaho

WANTED.—To sell farm of 52 acres with improvements, \$800; 80 stanzas of bees at \$2. Farm stock, if wanted, J. H. JOHNSON, Middaghs, Northampton Co., Pa.

WANTED.—Man, either married or single, to work on farm by month or year. Must no use tobacco, drink or swear. Give references, state age and experience.
C. J. BALDRIDGE, Kendaia, Seneca Co., N. Y.

WANTED.—To buy a second-hand foot and hand power saw for hive-making; Barnes or Seneca Falls combination machine preferred. State condition, make, number, and lowest cash price. Second-hand foundation-mill wanted also; must be cheap and in good condition.
J. I. CHENOWETH, Albion, Ia.

- WANTED.**—To sell bees and queens.
O. H. HYATT, Shenandoah, Iowa.
- WANTED.**—To sell or exchange an automatic gauge lathe and one broom-handle lathe. Address
W. S. AMMON, 216 Court St., Reading, Pa.
- WANTED.**—To sell basswood-trees for spring planting. One to four feet, 10c each; 10, 75c; 100, \$1.00.
G. W. PETRIE, Fairmont, Minn.
- WANTED.**—John, some new ginseng seed. Mine are the oldest that can be found.
A. P. YOUNG, Cave City, Ky.
- WANTED.**—Bee keepers to send 10 cts. for sample paper bags for putting up extracted honey.
R. C. ATKIN, Loveland, Colo.
- WANTED.**—To sell home and apiary in fine tupelo range. If you mean business, address
D. R. KEYES, Wewahitchka Fla.
- WANTED.**—To exchange good mandolin for a two-frame honey-extractor.
E. N. EVERSON, Brilliant, Ohio.
- WANTED.**—To sell sweet potatoes; choice seed; best varieties. Send for descriptive price list.
L. H. MAHAN, Box 143, Terre Haute, Ind.
- WANTED.**—To exchange full-blood Scotch Collie pups, or coons, for full-blood male St. Bernard, or cash.
F. S. WILLIAMS, Gelatt, Pa.
- WANTED.**—A partner to raise bees and honey for sale, or a helper; good business for right party.
JAS. REED, Camden, N. Y.
- WANTED.**—To exchange Root's hives for comb honey complete, for B. P. R. and S. C. B. Leghorn chickens. Write me
PERRY FOCHT,
R. F. D. No. 1, Wapakoneta, Ohio.
- WANTED.**—To sell, or exchange for stock, 300 colonies of Italian bees in frame hives, with comb-honey super and honey-house; bees at Hotchkiss, Colo.
Address S. W. WEEKS, Delta, Col.
- WANTED.**—Farm-hand of good steady habits; no tobacco, whisky, or swearing allowed. Write, stating age and experience, and wages wanted. A good place for the right man.
P. E. TWining, Kiptop, Ohio.
- WANTED.**—To sell a ten-room dwelling with all modern improvements; select neighborhood in the growing city of Bristol, Tenn., 14,000 population; rents at \$40.00 a month. Write for circular of this and other property.
M. D. ANDES,
Real Estate Agent, Bristol, Tenn.
- WANTED.**—To sell, or exchange for bee-supplies, the encyclopaedia Britannica, ninth edition with American revisions and additions; 25 volumes, 8×10½ inches, cloth binding, good condition; cost \$50—value it at \$15.
IRA N. DUNN, Glen Hazel, Pa.
- WANTED.**—Position, by young man of 21, in apiary; will also do general farm work, and will also take position that requires some education. Have in the past worked on my father's apiaries of 200 colonies. State wages you can pay. Correspondence solicited.
HUGO KOEHLER,
Tisch Mills, Manitowoc Co., Wis.
- WANTED.**—To sell 50 stocks of Italian bees, 50 patent hives, stock of tools, implements, bee-supplies, and foot-power Barnes saw at bargains; all new. Cause, lost health and use of right hand. Write.
C. S. INGALS, Morenci, Mich.
- WANTED.**—A man with small family to work a good farm of 40 acres, and an up-to-date apiary of 200 colonies, on shares; or can work the bees without the farm. A very good chance for the right man.
W. H. FORBES, Plainwell, Mich.
- WANTED.**—Farm hand with no bad habits, that wishes to learn bee-keeping. I prefer one that wants steady employment. I keep about 500 colonies, and run for both comb and extracted honey. Please state wages wanted.
W. J. STAHMANN, Bruce, Wis.

- WANTED.**—Comb to render into wax; will pay cash.
A. P. LAWRENCE, Hickory Corners, Mich.
- WANTED.**—To exchange Angora goats for any thing useful.
ED. W. COLE & Co., Kenton, Ohio.
- WANTED.**—Assistant apiarist; state age, experience, and wages desired. Address
C. C. HAWLEY, JR., Berthoud, Col.
- WANTED.**—To exchange my new price list of 2000 ferrets, now ready to ship, for your address on a postal card.
N. A. KNAPP, Rochester, Ohio.
- WANTED.**—To sell thick-top L. frames, in flat, from yellow pine, at \$8.00 per 1000, f. o. b.
G. F. TUCKER, Blountstown, Fla.
- WANTED.**—To sell a 10-h.p. horizontal engine with upright boiler, with pump, smoke-stack, and all connections, for \$125.
J. W. BITTENBENDER, Knoxville, Iowa.
- WANTED.**—To sell 10 bbls. White Bliss Triumph potatoes—a little sunburned or green, but all right for seed—not sorted, \$2.00 per barrel; will ship in the spring.
J. W. BITTENBENDER, Knoxville, Iowa.
- WANTED.**—A buyer for a copper liquefying and filling tank, capacity 400 lbs. of honey, practically new; will sell at a bargain. For full particulars, price, etc., address
IRA D. BARTLETT, East Jordan, Mich.
- WANTED.**—A good second-hand Barnes foot-power saw, in exchange for supplies. State condition and price.
THE A. I. ROOT CO.,
1200 Maryland Ave., S. W., Washington, D. C.
- WANTED.**—To sell 600 stands of Italian bees in Simplicity hives in lots to suit buyer. Will deliver the same to any point in the West if desired. Correspondence solicited.
TYLER BROS., Nicolaus, Cal.
- WANTED.**—Bee-man to assist in running 200 colonies. Write, stating your experience, and wages required to
W. R. ANSELL,
Apiarist, G. N. Ry., St. Paul, Minn.
- WANTED.**—To exchange stationary gasoline-engines 1 to 10 h. p., bicycle motors, and frames for motor cycles, for wood and metal working machinery, worn-out gasoline engines, etc.
TWIN CITY BICYCLE CO., La Salle, Ill.
- WANTED.**—A position to care for bees along the Pacific coast. Have had a limited experience; am of Swedish-American descent, 24 years of age. State wages when writing
HERMAN ROLF, Box 96, Rose Creek, Minn.
- WANTED.**—To sell or exchange for bees or supplies one McCormick corn-shredder, been used one week, just as good as new; and one McCormick corn-harvester, been used two seasons.
C. L. PINNEY, LeMars, Iowa.
- WANTED.**—For cash, 250 or 300 colonies of bees in ten-frame hives; extra combs also. Prefer those that have been run for extracted honey in the Southern States. State prices on cars and what you have for sale.
J. D. RHOADS, Las Animas, Colo.
- WANTED.**—To sell for cash, 5-gal. square tin cans, used for honey, at about half price of new cans. Also elegant exhibition 12-lb. no-drip honey-cases for plain Danz. and 4¼×4¼ sections; made for Pan-American. For prices, etc., address OREL L. HERSHISER, 301 Huntington Ave., Buffalo, N. Y.
- WANTED.**—To sell 50,000 well-rooted strawberry-plants, grown from new beds, Senator Dunlap, and 6 other choice varieties. 25 to 40 cts. per hundred; 10 per cent discount in lots of 500. Also eggs from gilt-edge Barred Rocks, and Vandresser laying strain. White Leghorns, \$1.00 per 15.
P. HOSTETLER, East Lynne, Mo.
- WANTED.**—A boy of fourteen to eighteen years of foreign parentage—German or French preferred—to work in apiary or on farm. An excellent opportunity is offered to the right party to work into a good paying business, as I want to retire as soon as possible. A good Christian home for a boy of good habits. For full particulars address
A. MOTTAT, Utica, Ill.

PAGE & LYON,

New London, Wisconsin.

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AND DEALERS IN . . .

BEE-KEEPERS' SUPPLIES. . . .

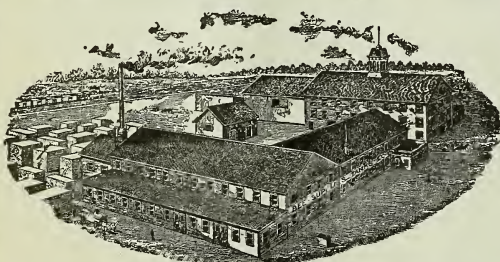
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J. M. Jenkins,
Wetumpka, Elmore Co., Ala.



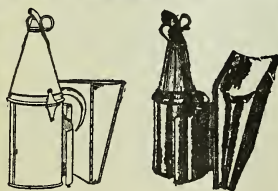
Kretchmer Mfg. Co., Box 60, Red Oak, Ia.

BEE-SUPPLIES.

Best-equipped factory in the West; carry a large stock and greatest variety of every thing needed in the apary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

— AGENCIES —

Trester Supply Company, Lincoln, Neb.
Shugart & Ouren, Council Bluffs, Ia.
Chas. Spangler, Kentland, Ind.



BINGHAM SMOKER.

Dear Sir:—Inclosed find \$1.75. Please send one brass smoke-engine. I have one already. It is the best smoker I ever used. Truly yours,

HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER

Bingham Brass Smokers.

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's four-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke-engine, 4-inch stove, per mail, \$1.50; 3½-inch, \$1.10; 3-inch, \$1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 23 years. Only three larger ones brass.

T. F. Bingham, Farwell, Michigan.

Established 1884.



BEE-KEEPERS' SUPPLIES!

In placing your orders for the coming season of 1903 do not forget that we always carry a stock of THE A. I. ROOT COMPANY's goods that are needed in a well-equipped apiary. We can sell you these goods as cheap as they can be had from the factory, owing that we get carload shipments from which we can supply your wants on short notice, and at a saving of freight.

We ask a trial order to convince you that we can serve you right. Send for our 40-page catalog, free.

 BEESWAX WANTED. 

JNO. NEBEL & SON,
High Hill, Missouri.

Headquarters in

CALIFORNIA !

We wish to remind GLEANINGS readers that we are again ready to serve them with whatever they require in Bee-keepers' Supplies. We not only have a good assortment of our own manufacture but we can furnish a

Full Line of Root's Sundries

such as Smokers, Sections, Cowan Extractors, etc. Let us have your name and address at once, and we will send you our catalog.

Union Hive & Box Co.
Los Angeles, Cal.



Minnesota,
Dakota,
Western
Wisconsin

BEE-KEEPERS!

Our 33d annual catalog for 1903 (92d edition) is now ready. Send for a copy at once. We have a full line of goods in stock, and can fill your orders promptly. Save freight by ordering from the St. Paul branch. **Bees and Queens.** Orders booked now for spring delivery. **Honey and Wax.** We handle honey and wax. Write for particulars.

The A. I. ROOT COMPANY

NORTHWESTERN BRANCH

1026 Miss. St., St. Paul, Minn.

Oregon Bee-keepers



For years we have supplied you with a portion of your requirements in bee-keepers' Supplies, for which we thank you. We are better prepared than ever to take good care of orders this season. We have acquired the business of Buell Lamberson's Sons, of this place, and have the agency for this State for

The A. I. Root Co., Medina, Ohio.

One carload is already on the way, and others will follow. If you require special goods or anything not usually kept in Western stocks, we can get it for you on our next car.

Seeds, Fertilizers, Trees, Garden Tools, Poultry and Bee Supplies.

Portland Seed Company,
Portland, Oregon.

Texas Bee-keepers.

STOCK.—Our warehouse is now stocked with a good assortment of Hives, Sections, Extractors, and other supplies direct from Medina.

PROMPTNESS.—We can therefore fill your orders promptly. Do not suffer long delay by ordering from some distant point but send orders here.

HEADQUARTERS for bee-keepers in San Antonio. Whenever you visit San Antonio you are invited to call at our office and make it your headquarters. See our display of supplies. Leading bee-journals on file for your perusal too.

WANTED.—Beeswax and Honey. Write for particulars.

The A. I. Root Co.,

438 West Houston Street,

San Antonio, Texas.

BEEKEEPERS *Notice*

We sell the Root goods here at Root's factory prices, which means the freight is paid to Des Moines, Iowa.

Immense stock and every variety of the best up-to-date goods now on hand packed for prompt shipment.

Satisfaction is guaranteed on every order sent us. Thousands have been pleased with their goods from us. We can satisfy you.

Write for estimates, sending list of what you will need, and get our discounts for early orders. We will save you money. Send to-day for 1903 catalog.

JOS. NYSEWANDER,
710-12 W. Grand Ave.
DES MOINES, IOWA.

26th Year

Dadant's Foundation.

WHY DOES IT SELL SO WELL?—Because it has always given better satisfaction than any other. Because in 25 YEARS there have been no complaints, but thousands of compliments.

WE GUARANTEE SATISFACTION.—What more can anybody do? Beauty, purity, firmness, no sagging, no loss. **PATENT WEED PROCESS OF SHEETING.**

BEEWAX WANTED AT ALL TIMES.—Send name for our catalog, samples of foundation, and veil material. We sell the best veils, either cotton or silk.

LANGSTROTH ON THE HONEY-BEE, Revised. The classic in bee-literature. \$1.20 by mail.

Bee-Keepers Supplies
of All Kinds.

DADANT & SON,
Hamilton, Ill.

Why Not



Place your order now? We will make you special prices for early delivery. We are headquarters in Central California for Root's Cowan Extractors, Sections, Weed Foundation, Smokers, etc., as well as a full line of local-made supplies. We can give you prompt service. We solicit your patronage.



Madary's Planingmill
Fresno, California.